SEPTEMBER 1994

Future User Needs and Requirements for Network Support Services

A Research Study for Ing. C. Olivetti S.p.A.

INPUT®

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I

Introduction

A Objective

The principal purpose of this research study was to obtain objective data concerning the actual present day needs and future requirements of corporate users for supporting local area networks (LANs). The research study provides Olivetti with user information relevant to the markets for LAN support offerings. The study supports Olivetti's understanding of the characteristics of LAN services and support needs, the more effectively to develop the sales and marketing arguments required to achieve further success in this sector.

B Scope

The scope of the research was defined by the following parameters:

- The target organisations would be large organisations
- The range of activities conducted by these organisations would comprise:
  - Government
  - Banking and Finance
  - Industry
  - Services
- Both existing strategic clients of Olivetti as well as prospects would be included.
- The research would be conducted in the following European countries as well as the United States:
  - Netherlands

- Spain
- France
- Portugal

The subject matter scope of the survey was broadly defined as all aspects of LAN network service, comprising its installation integration, its overall management and the support of its day–to–day operation. It covered:

- Cabling and network installation
- Managing network nodes
- Network software support
- Network performance analysis

C

Methodology

The field research for this project was conducted by telephone. The target respondents for the survey were senior managers with responsibility for information systems within their organisation. A structured questionnaire was utilised.

The sample frame researched was as follows:

– Netherlands	30
– Spain	30
– France	30
– Portugal	30
– United States	30

Olivetti made available to INPUT lists of the organisation which it would particularly wanted to see included within the survey which included target respondent names and telephone numbers.

In no instance was Olivetti identified as the sponsor of this research project.

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II

Executive Overview

This executive overview highlights some key conclusions from the report and provides a European market view derived from INPUT's customer services research.

A

Realising the LAN/Desktop Service/Support Opportunity

The adoption of client/server computing has become a commonplace and has led to a rapid expansion of these systems in the office and workplace. It would therefore appear to represent a tremendous external vendor service opportunity.

However, the IS community is now adapting to this changed environment by supporting LAN/Desktop based systems and thus potentially eroding the opportunity for service vendors to fully exploit its potential.

Nevertheless, the sheer size of the opportunity and its complexity, demand for key skills and distributed nature will create service vendor opportunities which can be exploited by a carefully planned and supported offering in the market place.

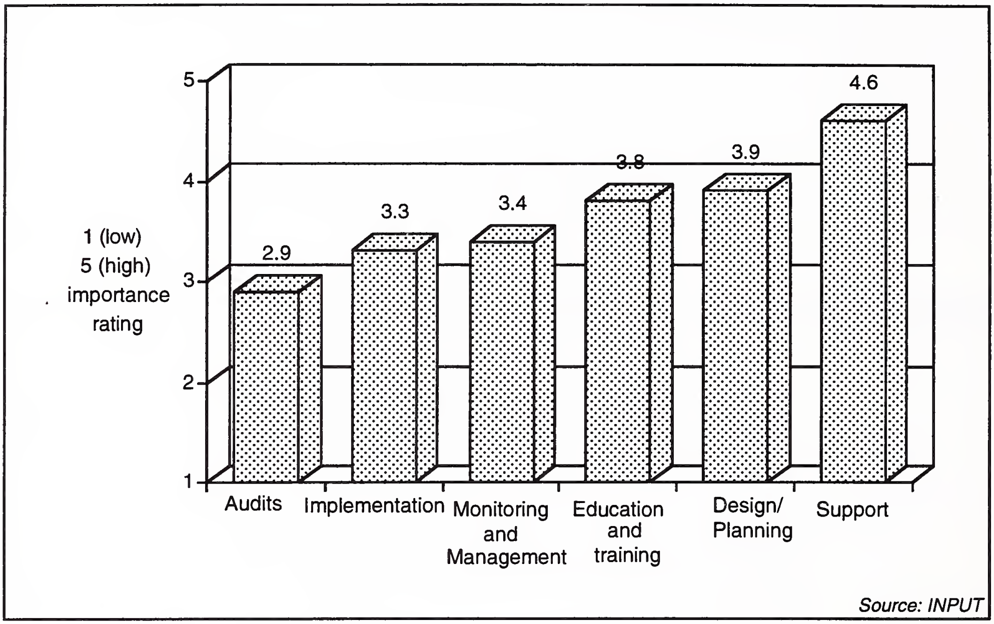
Crucial to success will be a service and support portfolio based on:

- Service activities related to products
- The assembly of a critical mass of technical and business integration skills
- An incremental strategy that avoids head on confrontation with defensive IS departments.

The user perception of the need for LAN services is shown by the survey data shown in Exhibit II-1. It can be seen that only three of the potential service areas identified are rated strongly, i.e. at 3.8 or above. This implies the need for considerable market development in presenting the need for new services.

Exhibit II-1

Importance of LAN Support Services

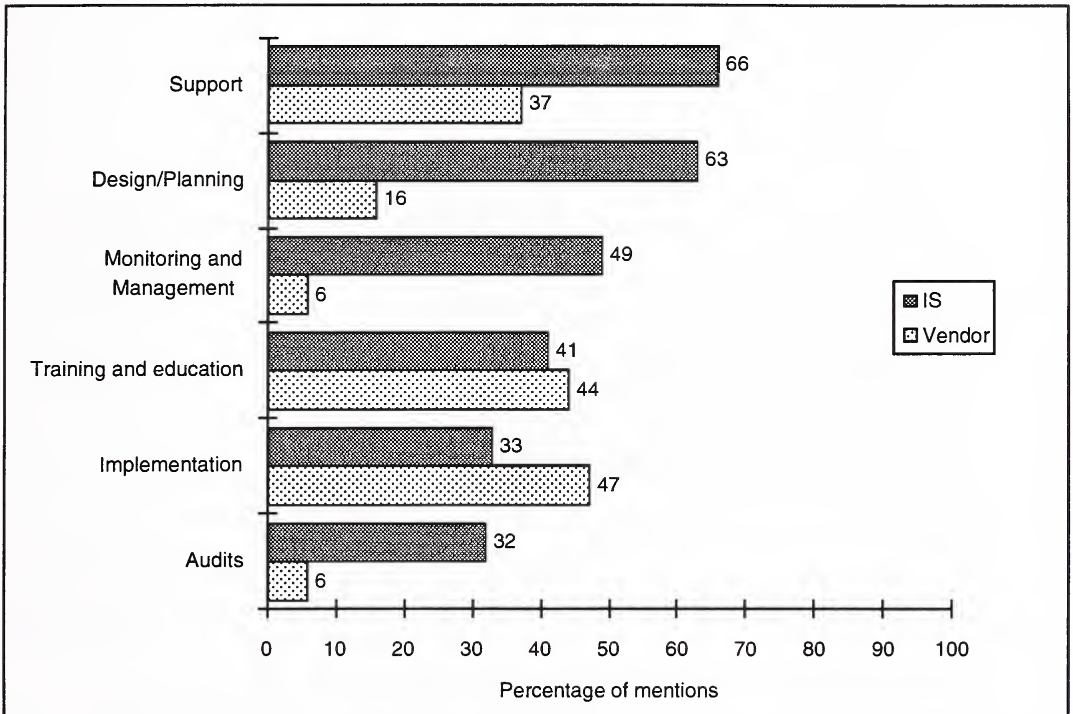


Source: INPUT

Exhibits II-2 and II-3 show comparative profiles for the user's view of responsibility for these various support elements. This data illustrates the need to view the internal IS department as a significant potential competitor for the provision of support to the LAN and the desktop.

Exhibit II-2

IS Responsibility Profile

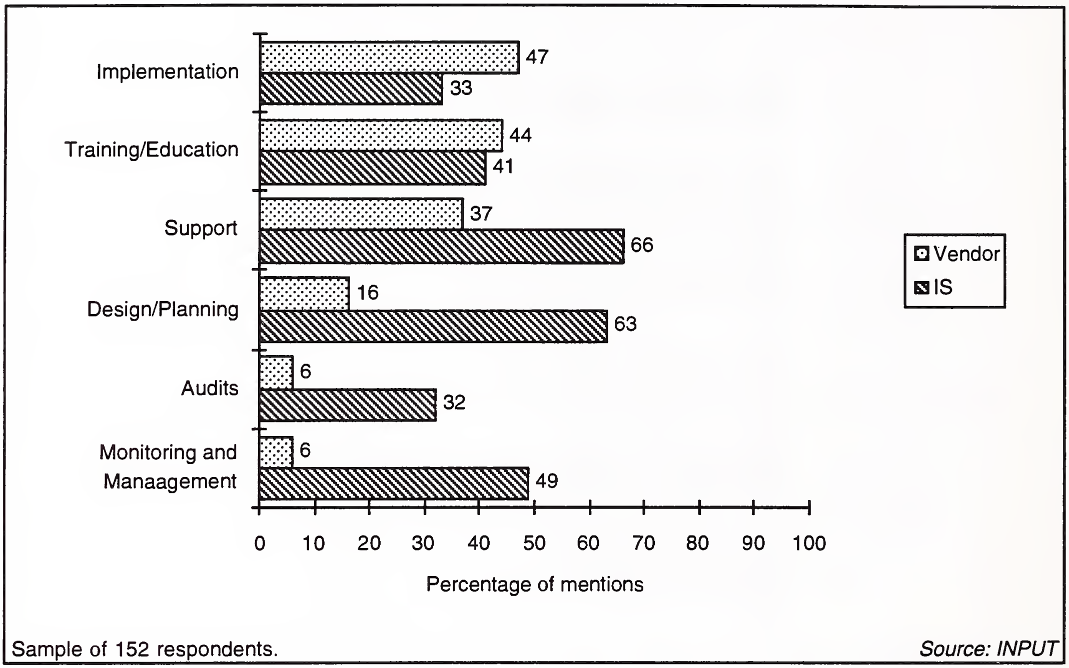


Sample of 152 respondents.

Source: INPUT

Exhibit II-3

External Vendor Responsibility Profile



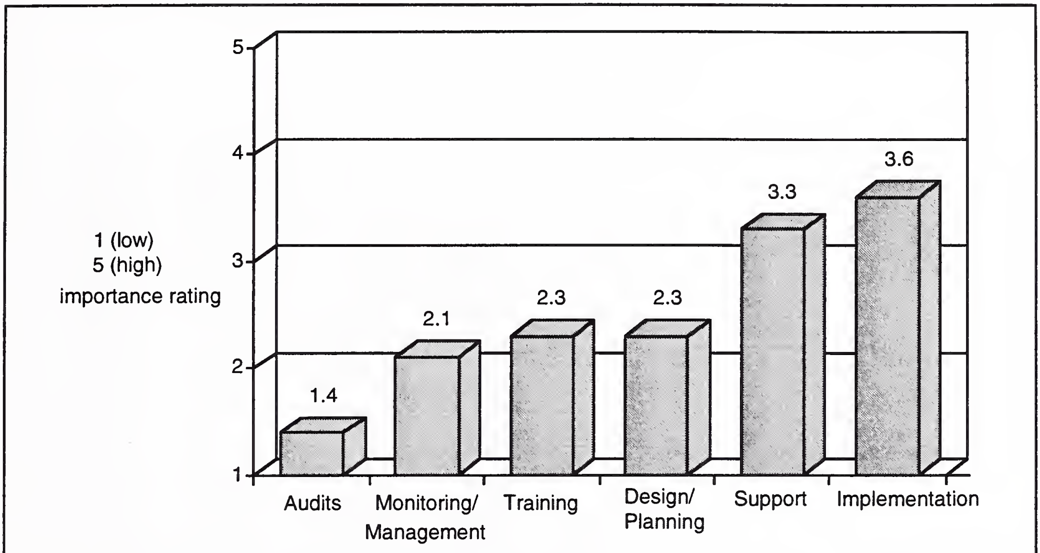
Sample of 152 respondents.

Source: INPUT

Exhibit II-4 shows the relatively low overall rating for the prospect of using some of the potential externally provided LAN/Desktop services.

Exhibit II-4

Likelihood of Using External Vendor Services



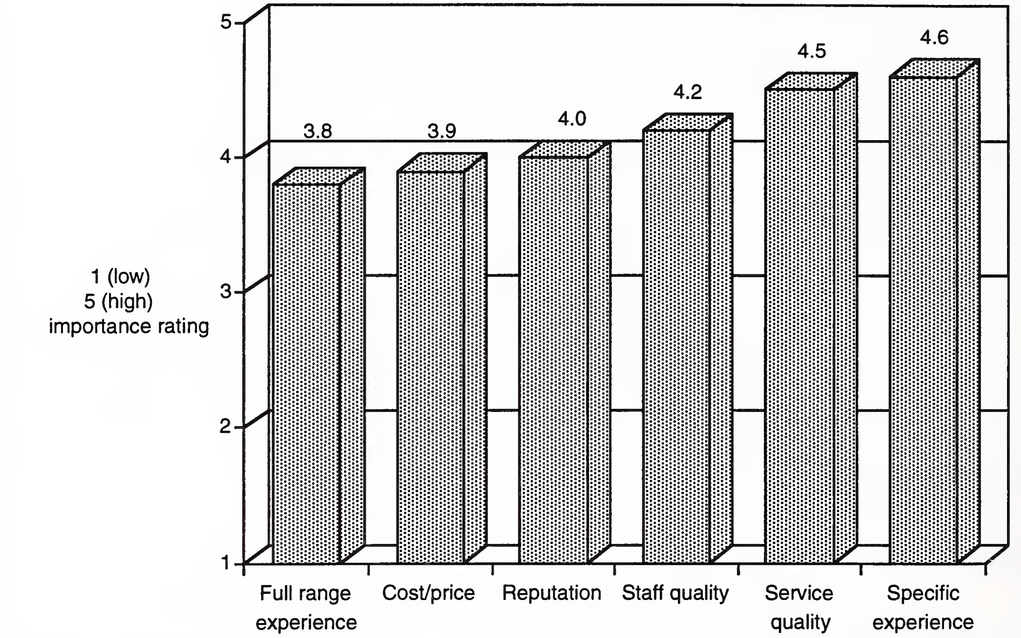
Sample of 152 respondents:

Source: INPUT

The criteria most favoured by users for selecting the use of external vendors for LAN/Desktop support are indicated in Exhibit II-5.

Exhibit II-5

Criteria for Selecting External Vendor Services

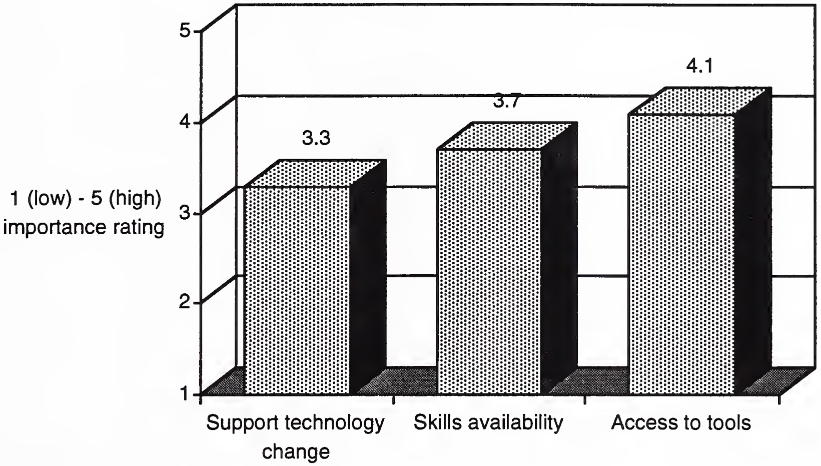


Sample of 152 respondents: (Ref:Q16) *Source: INPUT*

The importance attributed to particular vendor characteristics is shown in Exhibit II-6. Access to tools is clearly by far the most important of these features and supports the need to create services that are product based.

Exhibit II-6

Importance of Vendor Characteristics



Sample of 30 respondents: (Ref:Q19)

Source: INPUT

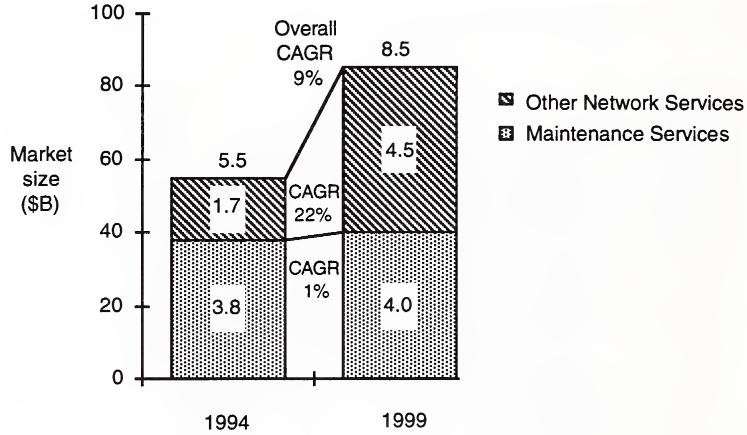
B
Market Sizing and Growth

The total European market for services related to desktop networks is estimated to be $5.5 billion and is forecast to grow at 9% CAGR over the next five years. However, as shown in Exhibit II-7, the market can effectively be viewed in two distinct parts:

- Maintenance services related to network equipment and desktop computers, which is growing at only 1% CAGR
- All other services, which are growing at a combined rate of 22% CAGR.

Exhibit II-7

Desktop Network Services — Maintenance vs. Non-Maintenance Services



Source: INPUT

Note that for the purposes of market sizing that this model includes elements of all the customer services sectors *except for* environmental services (which includes cabling and installation). A more detailed breakdown of the market components and their relative sizes is shown in Exhibit II-8.

Exhibit II-8

Desktop Network Services — Market Components

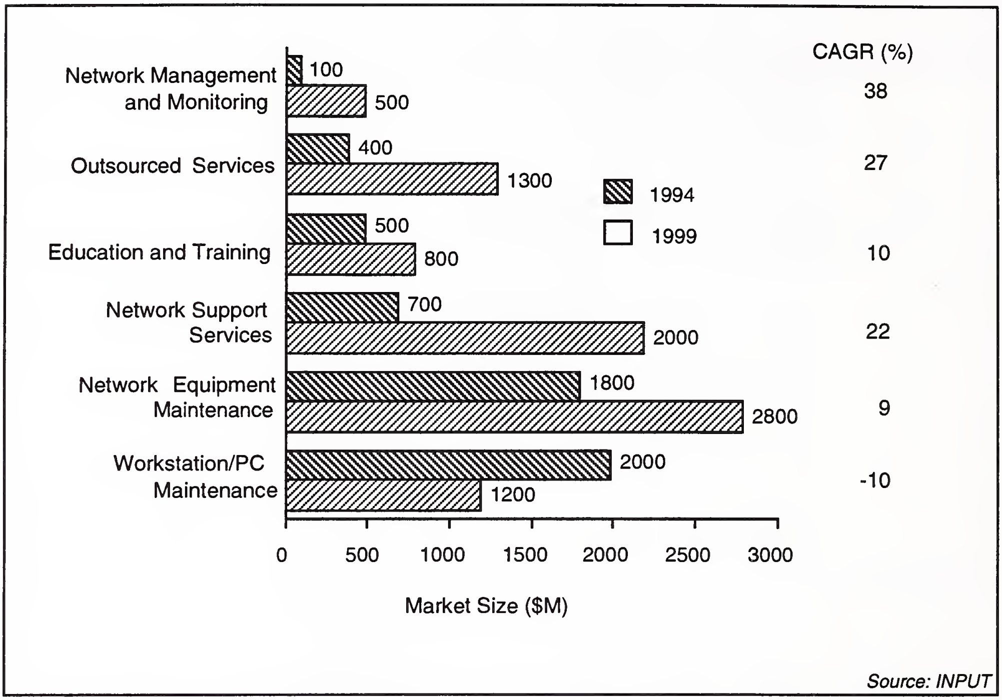
Service Component	1994 Expenditure ($m)	Proportion of Market (%)
Outsourced Services	400	7
Network Management and Monitoring	100	2
Network Support Services:	**700**	**12**
Software Support	300	5
Business Continuity	100	2
Other Services (e.g. Help Desk)	300	5
Training and Education	500	9
Equipment Maintenance:	**3800**	**70**
Network Equipment	1800	33
Desktop Equipment	2000	37
TOTAL	5500	100

Source: INPUT

Exhibit II-9 shows five–year growth forecasts for the component parts of the desktop network market.

Exhibit II-9

Desktop Network Services Growth, 1994-1999 ($m)



Source: INPUT

Maintenance services account for 70% of the total market at present. However, this is forecast to fall to 45% by 1999. Of the maintenance services, network equipment (including server) maintenance is forecast for 9% growth, but this is expected to be offset by desktop computer maintenance which is in decline (10% negative growth over the next five years). This reflects the ultra- reliability of desktop equipment, the use of extended warranty and the increasing reluctance of organisations to take out maintenance contracts. However, the maintenance of network equipment continues to be a growth market, and will be the focus of increasing competition between the equipment vendors, the independent maintenance organisations and the channels.

The market for non-maintenance network services can be divided into four components, as shown in Exhibit II-8. The largest component is *network support services*, which are the ongoing services such as software support, business continuity (disaster recovery), help desk services and system administration. These services combined are forecast to grow 22% CAGR by 1999.

Network support services are sold mainly as point services or as integrated services which make up customised network support solutions. However, 7% ($400 million) of services are supplied as fully outsourced contracts with major outsourcing vendors. The market for outsourced services shows substantial growth potential (27%), but this is a relatively small, specialist market. The smallest, but fastest growing market is for *network management and monitoring* services, which includes:

- Proactive remote network monitoring and support
- Monitoring, notification and diagnostics
- Asset management
- Configuration management
- Fault management
- Performance management

III

Spain

The data from the Spanish sample is analysed in this chapter.

Section A examines the subject of LAN/desktop support services and the current allocation of responsibility for their provision.

Section B focuses on the current use of external services vendors for the provision of LAN/Desktop services and the attitudes of respondents towards the use of external vendors for the future provision of these services.

A

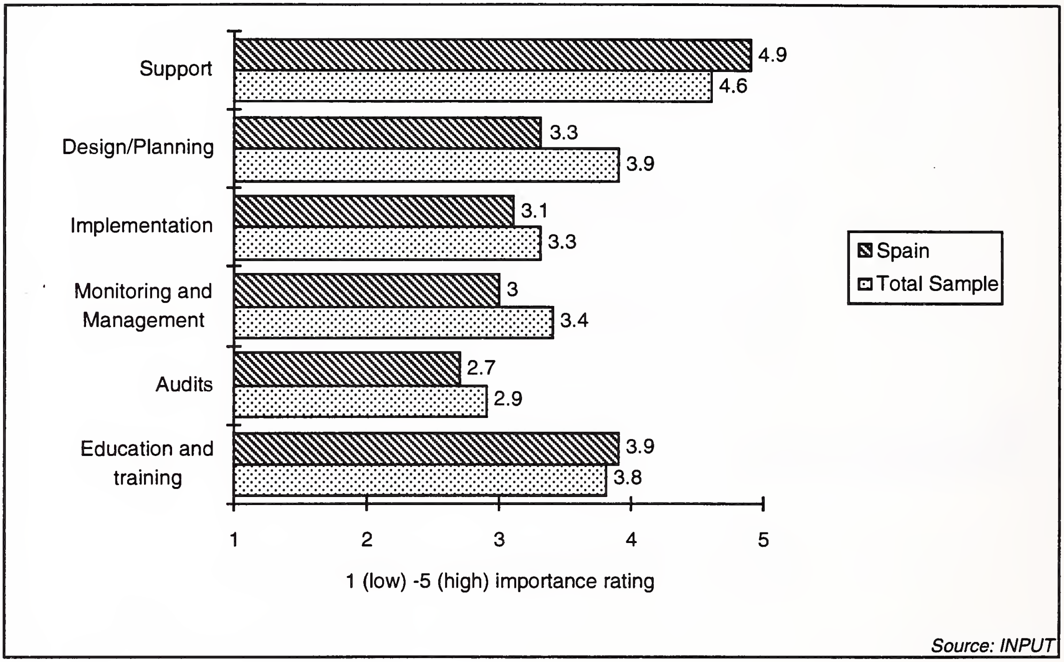
LAN Support Services

1. Key LAN Services

Exhibit III-1 shows the importance ratings for the various LAN related services that can be provided to the user' site for the Spanish sample.

Exhibit III-1

Importance of LAN Support Services



Source: INPUT

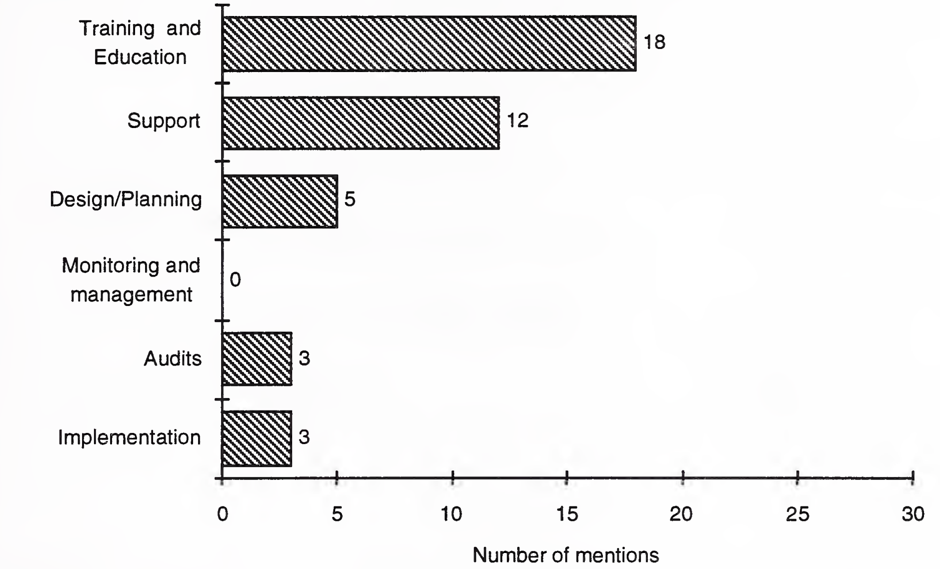
2. Responsibility Profiles

Exhibit III-2 shows the profile for the various LAN related services that respondents reported were the responsibility of the workgroup. Exhibit III-3 provides a comparison of the Spanish profile with that for the total sample in percentage terms.

Exhibit III-4 and 5, and Exhibits III-6 and 7 show respectively those for the IS group and for independent third-party vendors.

Exhibit III-2

Workgroup Responsibility Profile - Spain

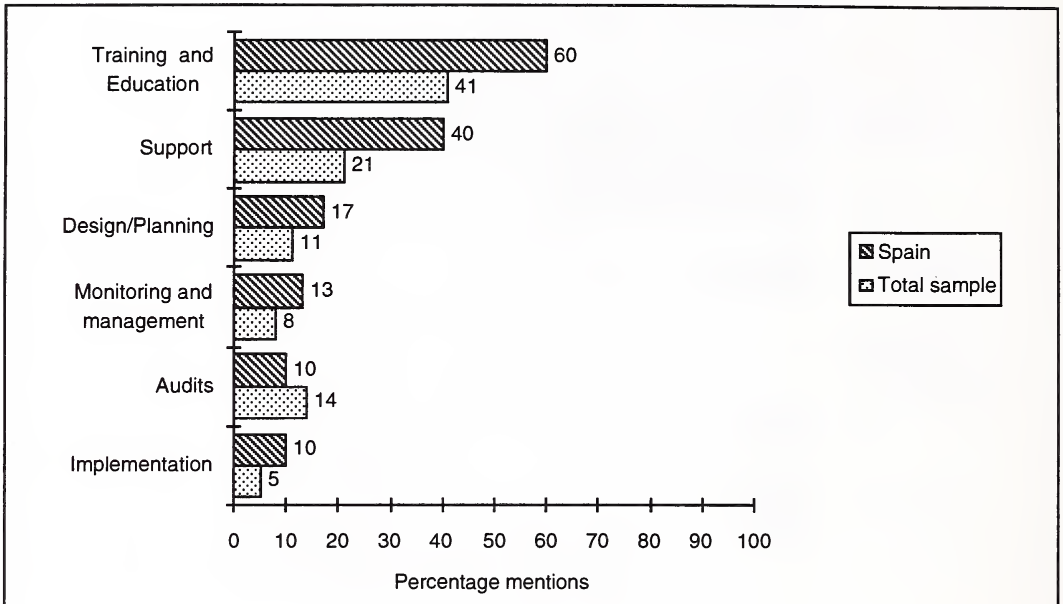


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit III-3

Workgroup Responsibility Profile Comparison—Spain

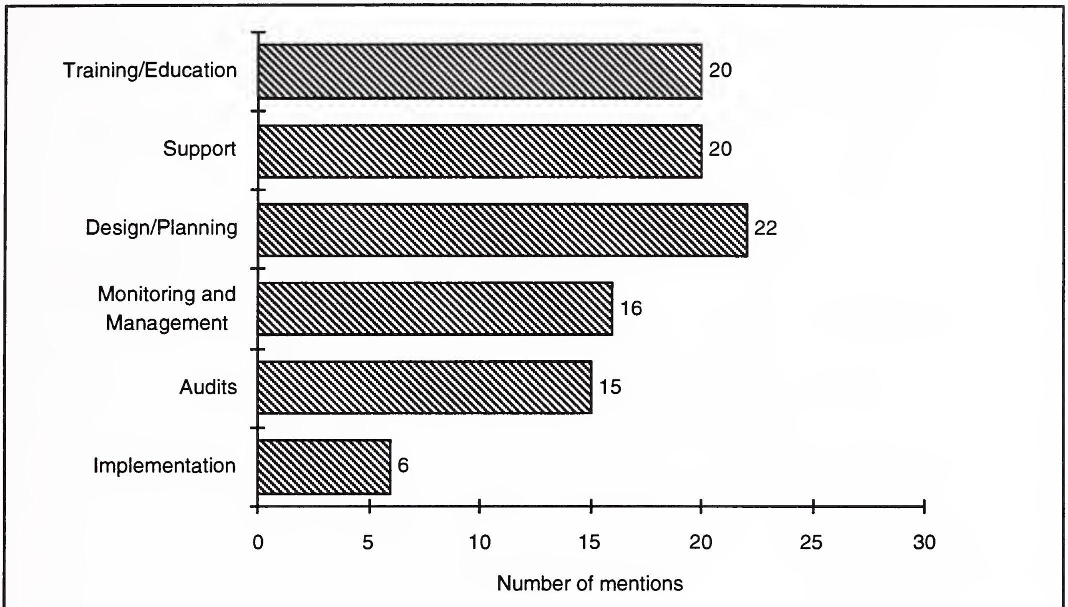


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit III-4

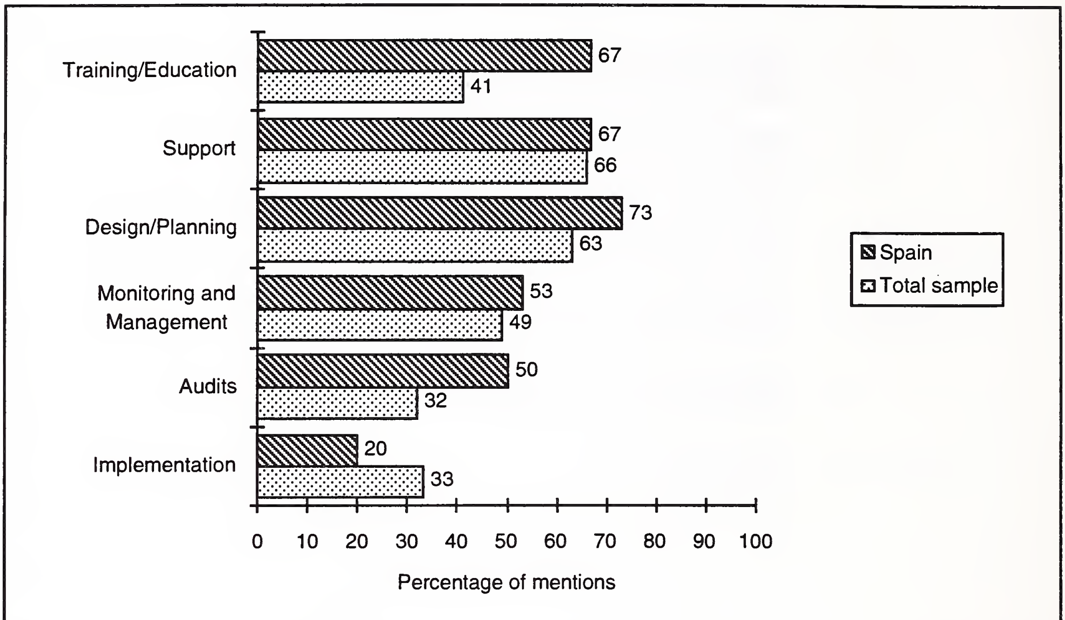
IS Responsibility Profile—Spain



Source: INPUT

Exhibit III-5

IS Responsibility Comparative Profile—Spain

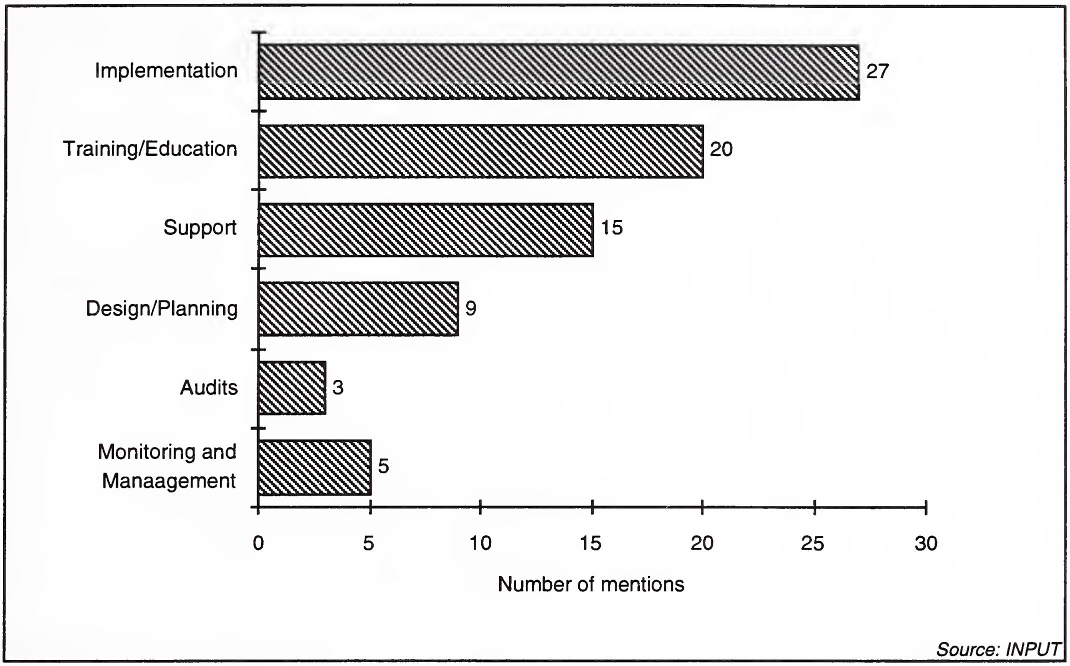


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit III-6

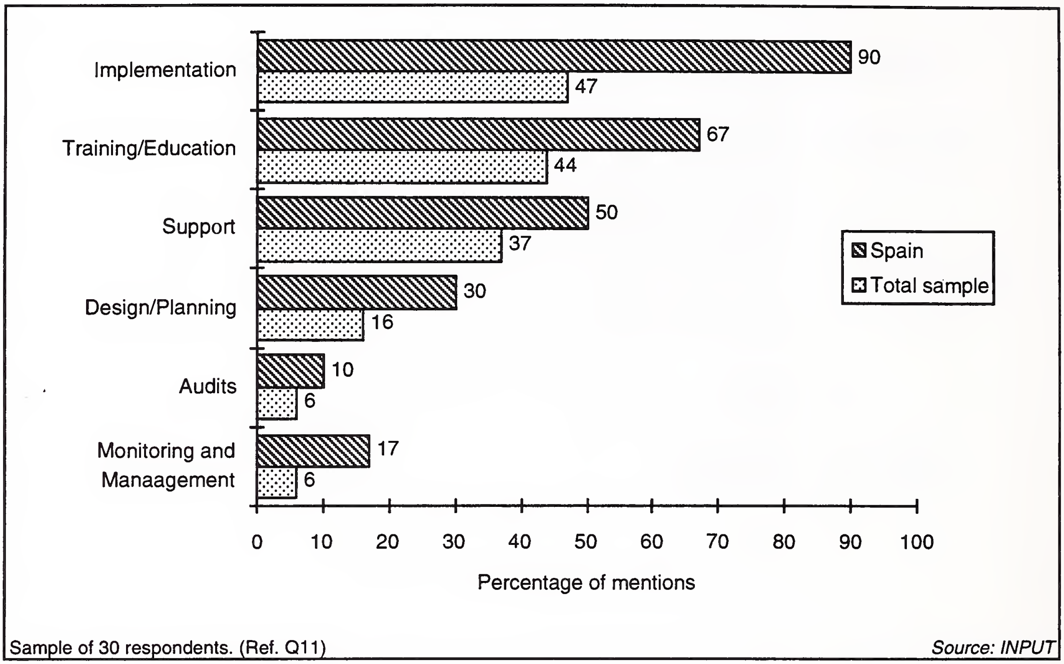
External Vendor Responsibility Profile—Spain



Source: INPUT

Exhibit III-7

External Vendor Responsibility Profile - Spain



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

3. LAN Service Areas

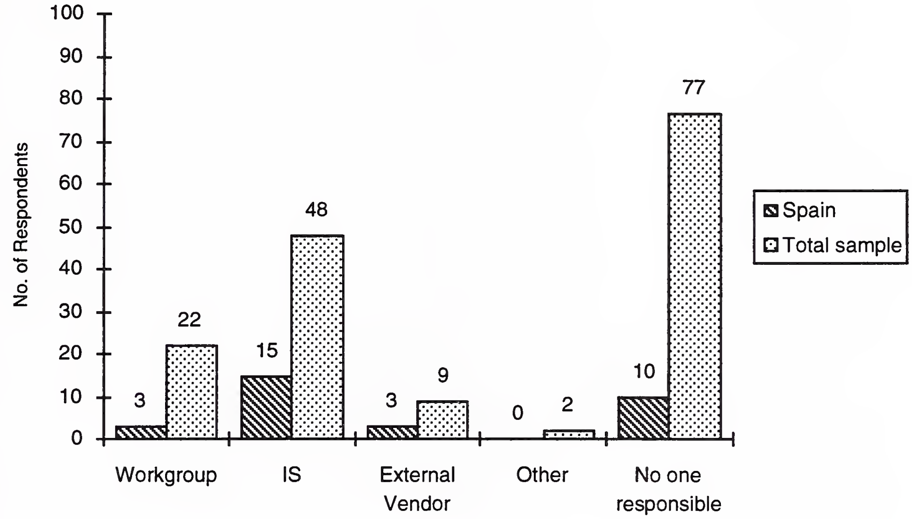
a. Audits

The overall importance rating for this activity was low for the Spanish sample at 2.7.

Exhibit III-8 shows the responsibility profile for the LAN/desktop audit function.

Exhibit III-8

LAN/Desktop Audit Function Responsibility Profile — Spain



Sample of 30 respondents. (Ref. Q11)

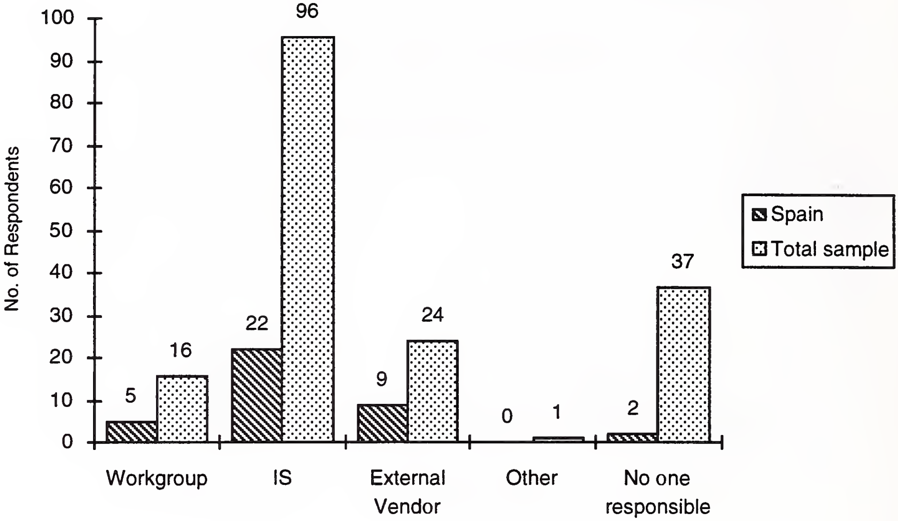
Source: INPUT

b. Design and Planning
The overall importance rating for this area was relatively weak at 3.3.

Exhibit III-9 shows the responsibility profile for the LAN/desktop design and planning function.

Exhibit III-9

LAN/Desktop Design and Planning Function Responsibility Profile — Spain



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

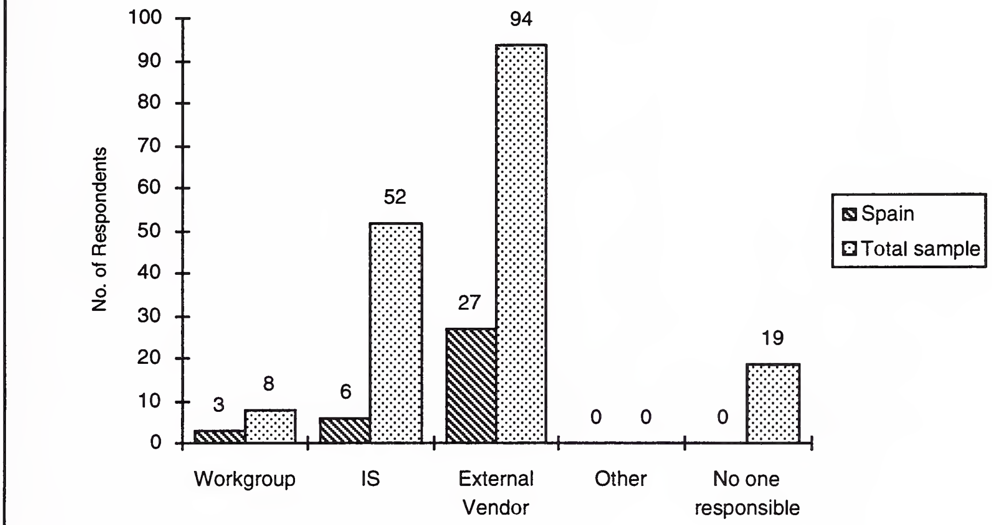
c. Implementation

The overall importance rating for this area was 3.1.

Exhibit III-10 shows the responsibility profile for the LAN/desktop implementation function.

Exhibit III-10

LAN/Desktop Implementation Function Responsibility Profile — Spain



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

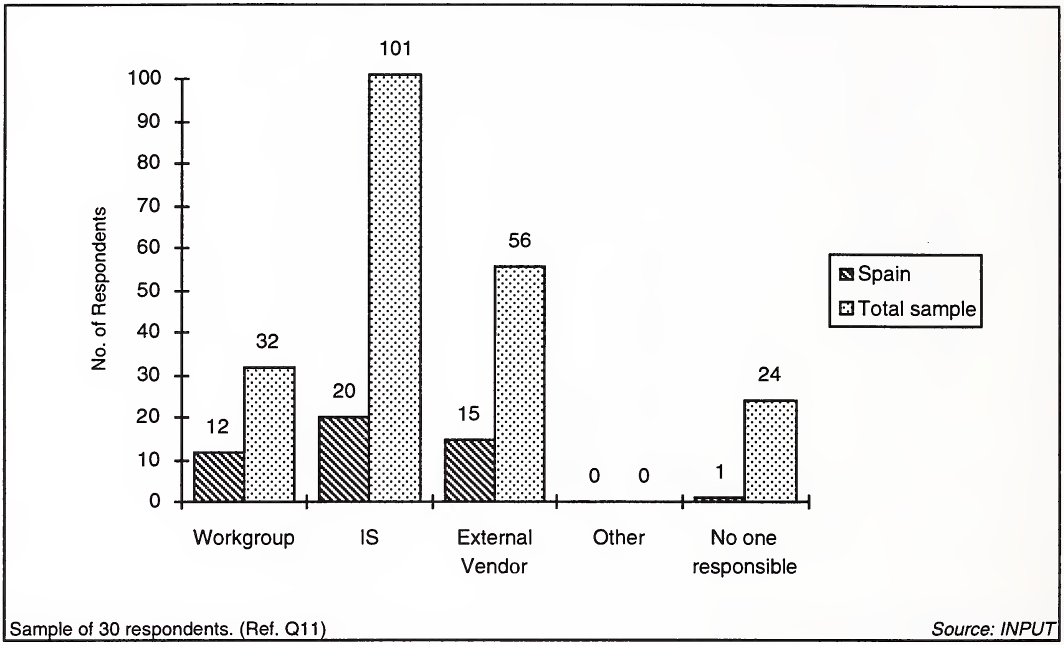
c. Support

The overall importance rating for this area was 4.9 for the users who gave a response on this question.

Exhibit III-11 shows the responsibility profile for the LAN/desktop support function.

Exhibit III-11

LAN/Desktop Support Function Responsibility Profile — Spain



Sample of 30 respondents. (Ref. Q11)

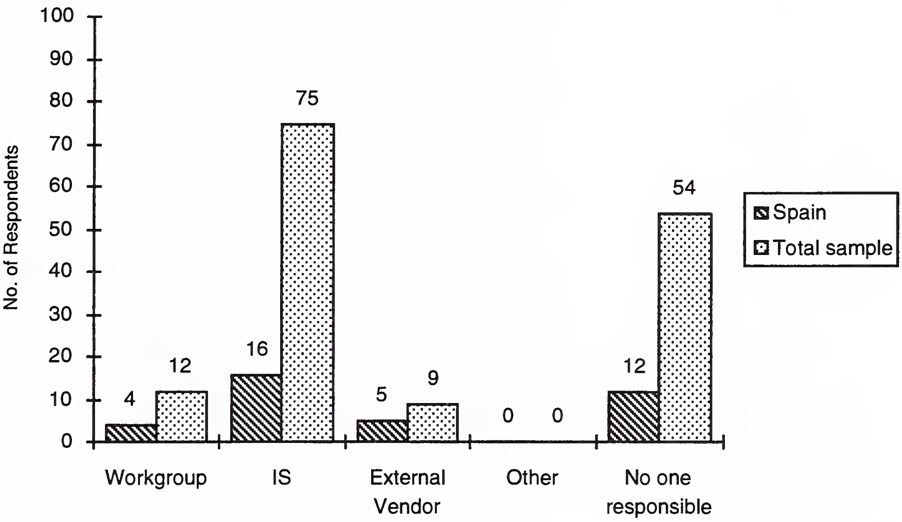
Source: INPUT

d. Monitoring and Management.
The overall importance rating for this area was 3.0.

Exhibit III-12 shows the responsibility profile for the LAN/desktop monitoring and management function.

Exhibit III-12

LAN/Desktop Monitoring and Management Function Responsibility Profile—Spain



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

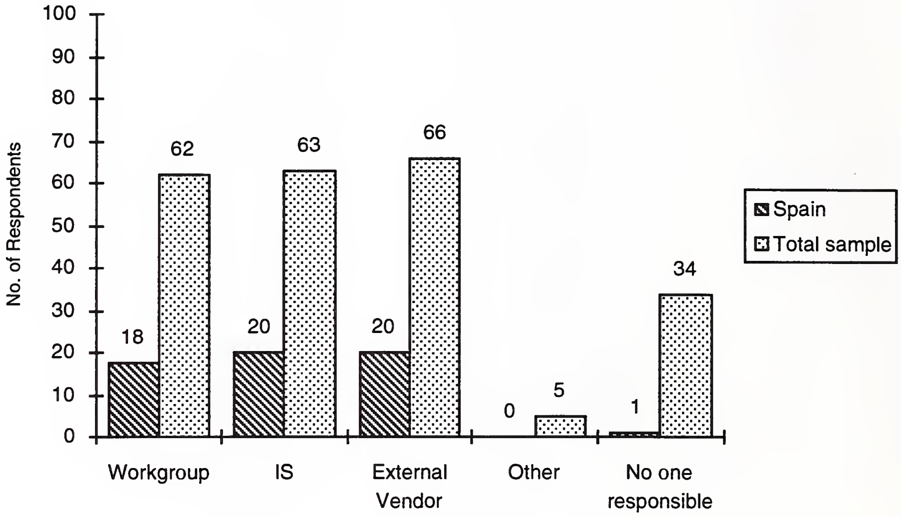
e. Training and Education

The overall importance rating for this area was a relatively strong 3.9.

Exhibit III-13 shows the responsibility profile for the LAN/desktop education and training function.

Exhibit III-13

LAN/Desktop Training and Education Function Responsibility Profile — Spain



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

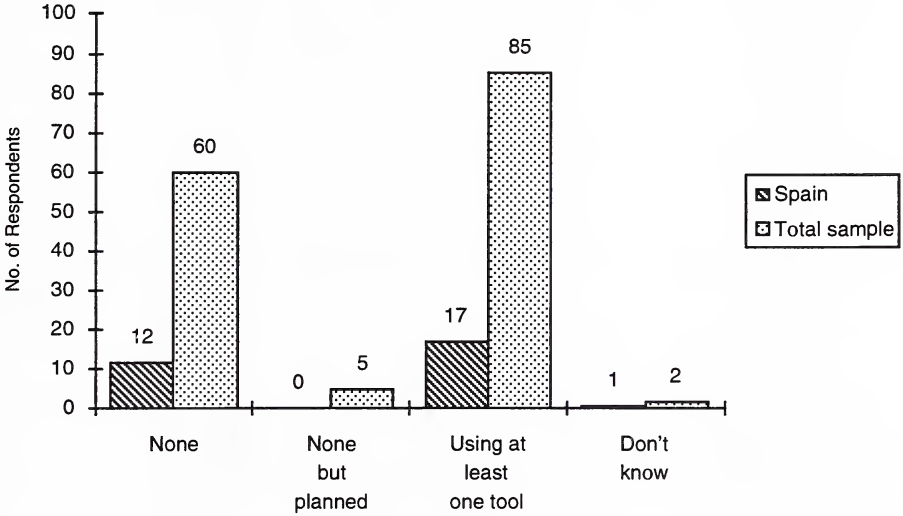
f. Methodologies and Tools

In connection with the monitoring and management function for the LAN respondents were also asked to state what management methodologies or tools they were using for automating any of the functions reported on in sub-sections *a.* through *e.* above.

The extent to which they were using tools or methodologies at all is shown in Exhibit III-14 below.

Exhibit III-14

LAN/Desktop Methodologies and Tools Usage — Spain



Sample of 30 respondents. (Ref. Q12)

Source: INPUT

The most commonly mentioned tool in use with three mentions was Excel. Org/Org Plus was mentioned twice. Also mentioned were Quattro Pro, FoxPro, Timeline, Lotus Agenda, Paradox, SuperProject and Superbase 4.

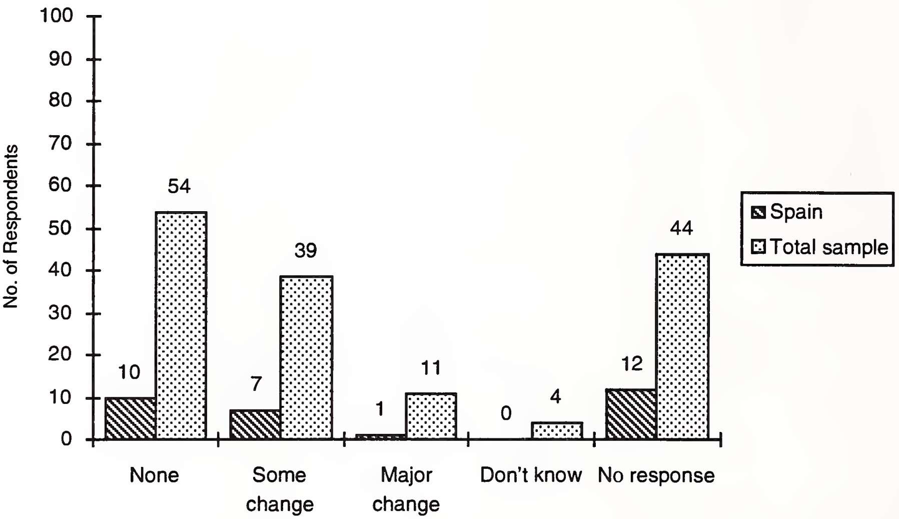
g. Anticipation of Change in LAN/Desktop Environment

The overall picture obtained from the Spanish sample was one of little anticipated significant change in the LAN environment in the foreseeable future, i.e. over the next two years. However, there was a significant incidence of *no response* to this question in the Spanish sample.

Exhibit III-15 shows the histogram of responses in respect of anticipated change.

Exhibit III-15

Anticipated Change
LAN/Desktop—Spain



Sample of 30 respondents. (Ref. Q12)

Source: INPUT

Some insights into the reasons for change, or lack of anticipated change, in the LAN/Desktop support environment are provided by the user comments listed in Exhibit III-16 below.

Exhibit III-16

Reasons for Lack of Change in the LAN/Desktop—Spain

will move totally to LAN systems but it could take 5-6 years

not until our current projects have been completed (1996 onwards)

will continue to grow but do not expect support infrastructure to change

possibility of desktop services being contracted to an FM supplier no major changes expected in medium term

may want to utilise in-house staff more in a development capacity

current installation relatively new - no change expected before 1996

why change a well-established support function?

fully committed for the next 3-4 years - DK after that

continually review situation & make recommendations based upon that

as LAN grows, need to improve performance issues

long-term possibility of outsourcing - still only at early stages

support is compact & effective - cost-effective to improve?

any major support change would require a big movement in current strategy

small organisation with budget limitations

LAN will get to stage where formal management/monitoring procedures will be needed

small LANs - don't allow much growth

need to revitalise some operations (monitoring & management)

change may/may not occur - depends on whether in our interests

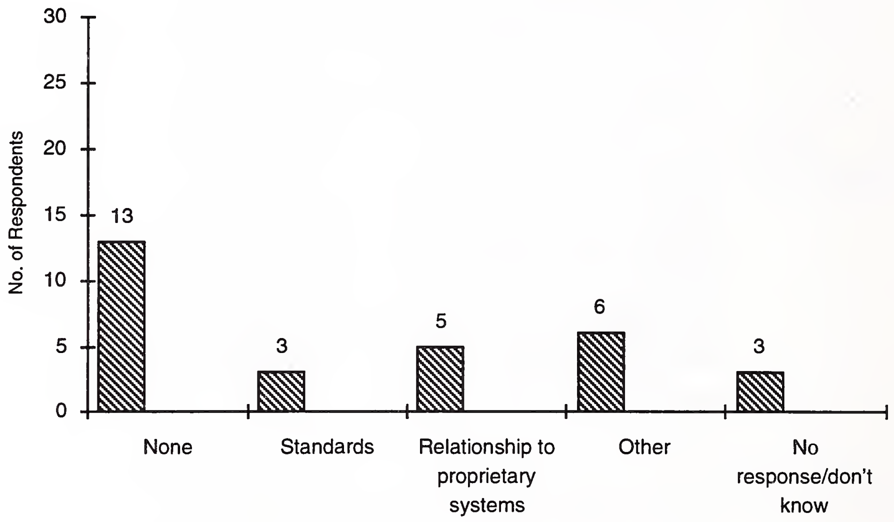
support is a functional operation & has no strategic importance

other areas will change, not support

Respondents were also asked to comment on the potential barriers they perceived to the more successful use of LAN technology, Exhibit III-17 shows an analysis of their responses.

Exhibit III-17

Barriers to Using LAN/Desktop Technology — Spain



Sample of 30 respondents. (Ref. Q14a)

Source: INPUT

The other category included the following responses:

- Head office interference
- Security issues with PCs
- Data corruption
- Realisation of PC/UNIX integration
- Other decision making groups.

The principal point that emerged from the question concerning addressing LAN barriers was moving to open systems and integrating all operating systems and LANs.

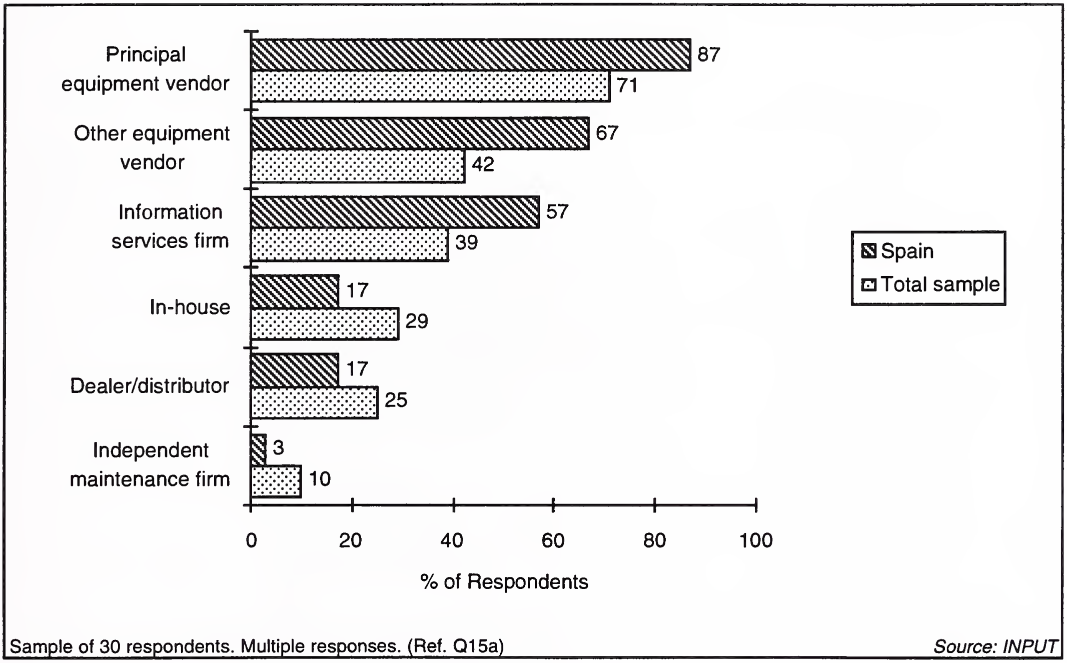
B
Use of Service Vendors

1. Current Use of Vendors

Exhibit III-18 shows the distribution for the Spanish sample in respect of vendor supply of LAN related support services.

Exhibit III-18

Providers of LAN Support Services - Spain



Sample of 30 respondents. Multiple responses. (Ref. Q15a)

Source: INPUT

Some further appreciation of the types of services provided by vendors can be obtained from the listing of user comments included in Exhibit III-19.

Exhibit III-19

Types of LAN/Desktop Services Provided by External Vendors- Spain

hardware, maintenance & engineering services/network installation & contingency planning

datacomms skills/connectivity/maintenance services (software & services - in-house) network support/equipment, integration of LAN/WAN services (software & services - in-house)

total solution, incorporating all external services

design/bespoke development/development tools/all maintenance

balance between in-house & external sources/wide range of services contracted out

application support & development/datacomms experience/product supply

development & run-time licences/support functions

product support & assistance/consultancy work may become available

total turnkey system

all services

integration/4GL development

design & consulting/all types of support services/implementation of variety of programs

all implementation services/consultancy/equipment maintenance

mainly hardware & comms equipment

a whole combination of external products & services

application solutions/implementation & supporting services

everything which we resource externally

product/software/development tools (refused names)

hardware & software/associated services

hardware/software supply & installation/comms enabling/operating systems/development

external supply and support

large no. of suppliers supplying everything

business solutions to our needs/actual services irrelevant (names refused)

implementation & supporting services

full support & implementation

most external services are through IBM and/or their reseller

hardware/operating systems/application development/netware equipment & services

software solution & support

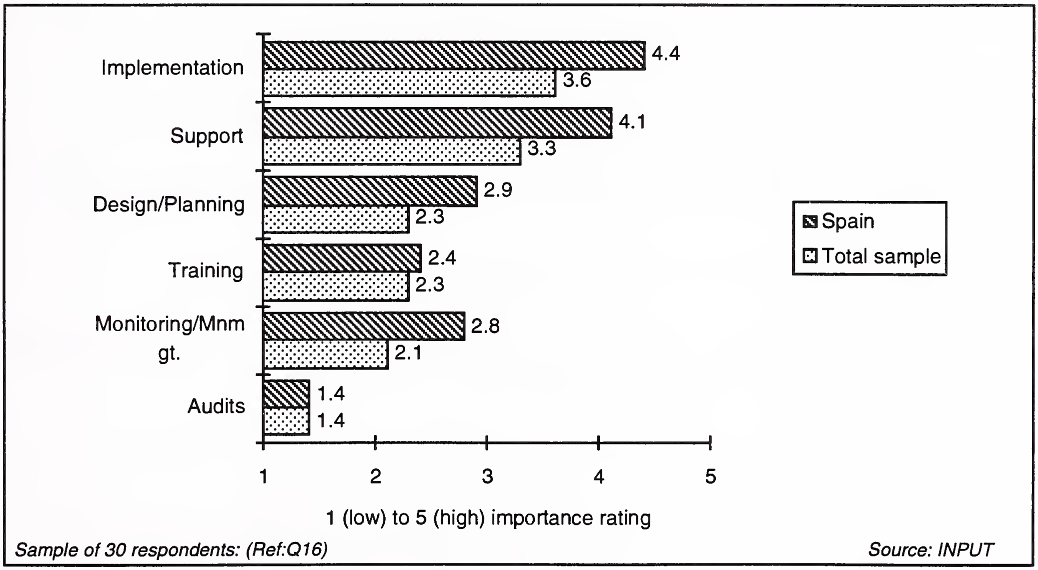
all system & support services

2. Likelihood of Using External Vendors

Exhibit III-20 shows the distribution for the Spanish sample in respect of the likelihood of using vendors to supply LAN related support services.

Exhibit III-20

Likelihood of Using External Vendor Services — Spain

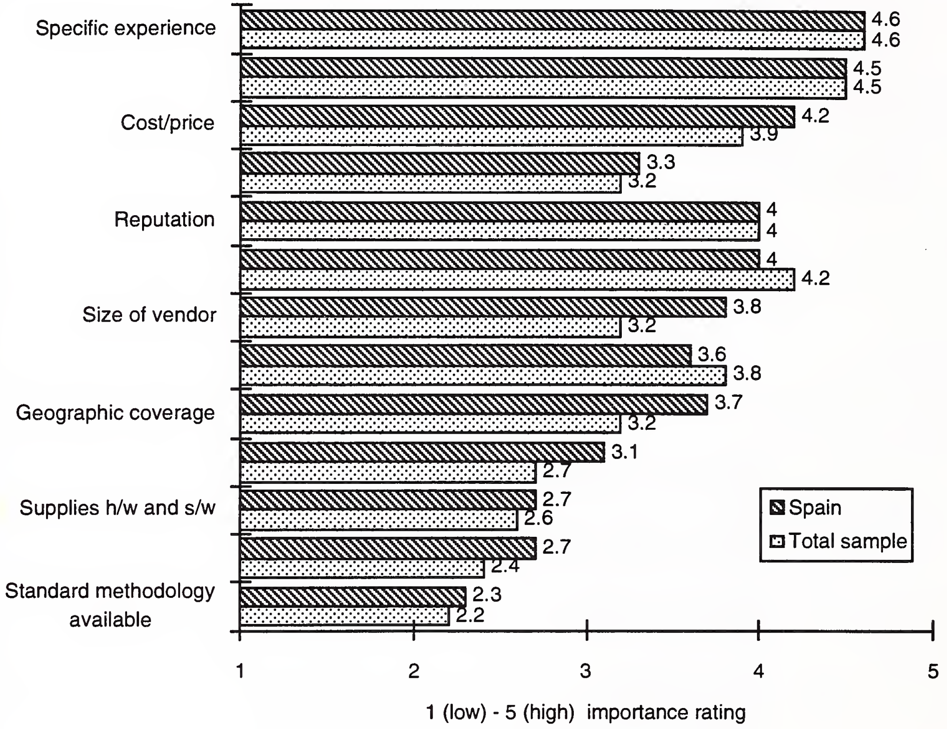


Sample of 30 respondents: (Ref:Q16) *Source: INPUT*

The criteria most favoured by users for selecting the use of external vendors for LAN/Desktop support are indicated in Exhibit III-21.

Exhibit III-21

Criteria for Selecting External Vendor Services—Spain



Sample of 30 respondents: (Ref:Q16)

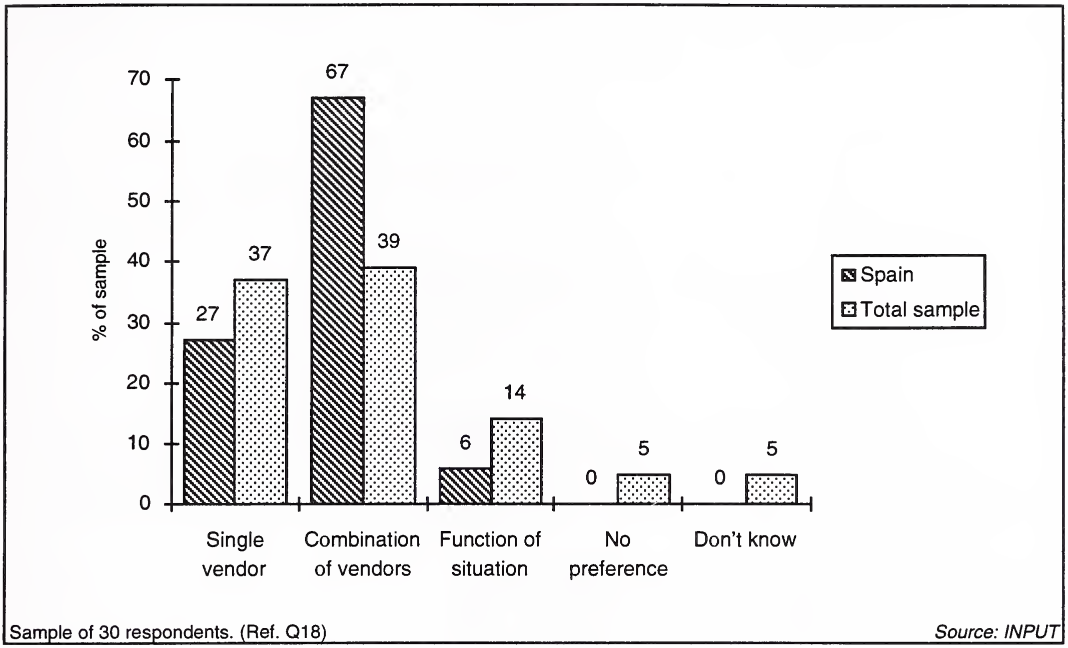
Source: INPUT

Other criteria mentioned by users included the vendor's solutions provision capability and their business experience.

Respondents were questioned about their preferences in relation to the use of single generalist suppliers or for the use of a number of specialist vendors to support LAN services. Responses to this issue are analysed in Exhibit III-22.

Exhibit III-22

User Preference for Single or Multiple Specialist Vendors — Spain



Sample of 30 respondents. (Ref. Q18)

Source: INPUT

The main reasons cited for utilising a single vendor were:

- Single point of contact
- Ease of communication
- Ease of control.

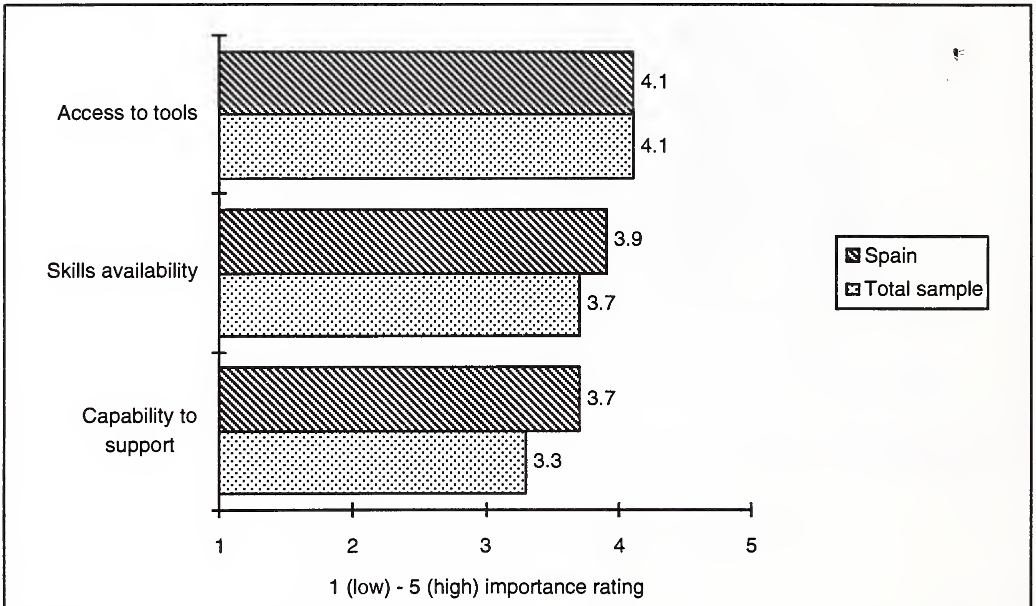
The main reasons cited for using a combination of specialist vendors were:

- Spread risk
- Reduce dependency on one supplier
- Ability to select best of breed
- Company policy.

Respondents were also specifically questioned about the importance of three factors which were considered to be of key significance in the service vendor selection process. These were skills availability, access to tools and the perceived ability of the vendor to deal with difficulties in technological change and improvement. User responses are recorded in Exhibit III-23.

Exhibit III-23

Importance of Vendor Characteristics — Spain



Sample of 30 respondents: (Ref:Q19) *Source: INPUT*

It can be seen from Exhibit III-23 that *access to tools* and skills availability were rated quite highly by the Spanish sample. Other factors that were mentioned included solution provision and software availability.

IV

France

The data from the French sample is analysed in this chapter.

Section A contains data analysis concerning the LAN/Desktop environment particularly the criticality of the installation to the business operation within which it is located.

Section B examines the subject of LAN/desktop support services and the current allocation of responsibility for their provision.

Section C focuses on the current use of external services vendors for the provision of LAN/Desktop services and the attitudes of respondents towards the use of external vendors for the future provision of these services.

A

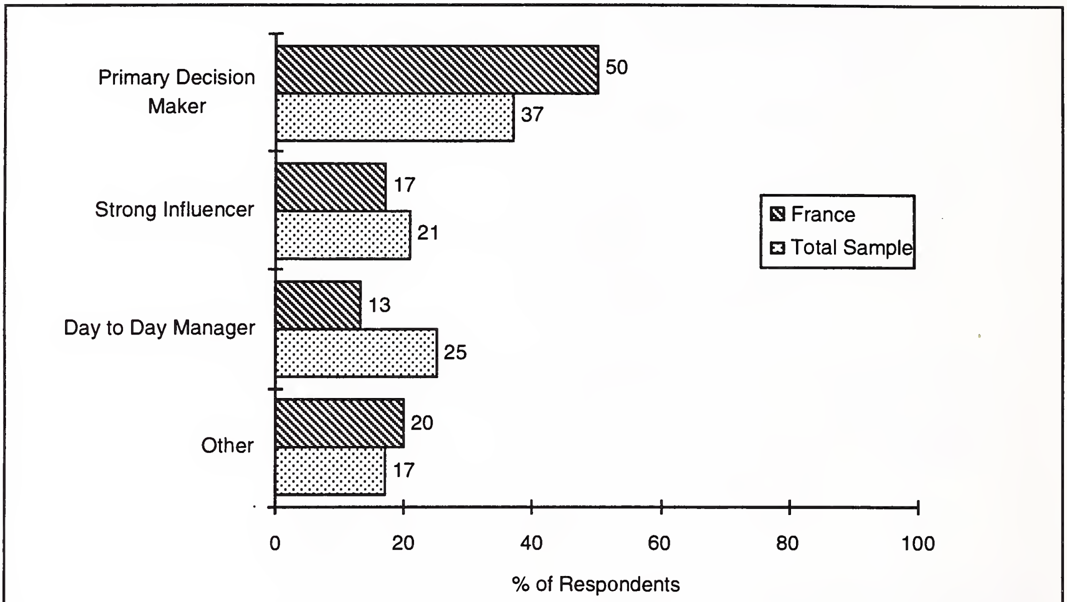
LAN/Desktop Environment

1. Criticality of LAN/Desktop Operations

Exhibit IV-1 shows the respondent profile for the French sample in respect of their involvement with LAN management services.

Exhibit IV-1

Respondent Involvement with LAN Management Responsibility— France



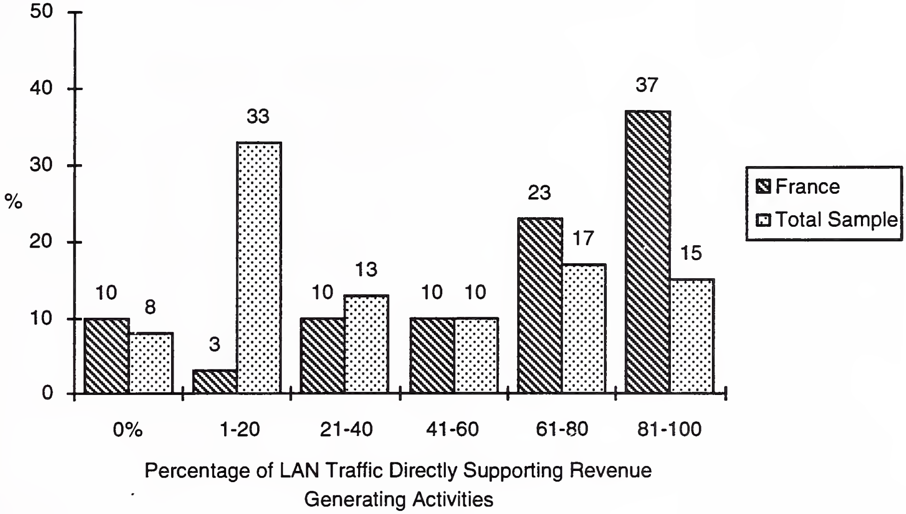
Sample of 30 respondents. (Ref. Q1)

Source: INPUT

Exhibit IV-2 shows the distribution of responses regarding the proportion of LAN traffic that is considered to support revenue generating applications. The average rating for France is 60%.

Exhibit IV-2

LAN Support for Revenue Generating Applications—France



Sample of 30 respondents. (Ref. Q2a)

Source: INPUT

Exhibit IV-3 lists comments made by respondents in respect of the impact of significant network outage on their business operations.

Exhibit IV-3

Impact of Significant Network Outage—France

would be a major problem

in banking a major disaster

it would stop

we are IT-dependent

dread to think about it! (all main applications are LAN-based)

loss of production & inability to fulfil order commitments what do you think?!

very damaging

whole business would suffer

serious

whole business revolves around computers

chaos

must be kept to an absolute minimum

it would be major

considerable loss to our business

major problems would be caused

very major situation

have high dependency on LAN

implications would be extremely damaging

whole business runs on the LAN

detrimental effect on business

everything we do is automated

big impact

60% of admin. functions so dread to think!

any sort of outage is serious

design & drawing office would be out

we would cease to operate

do not tolerate downtime of any high proportions

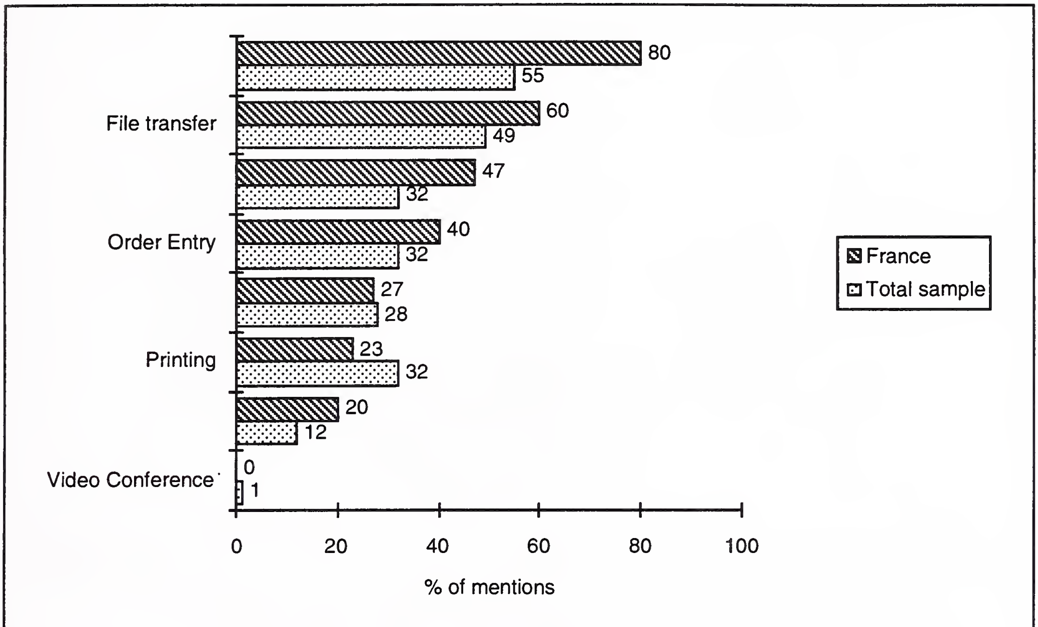
would cause considerable problems

distribution side of business would falter

Exhibit IV-4 shows a profile of the principal applications running on LANs for the French sample.

Exhibit IV-4

Principal LAN Applications—France

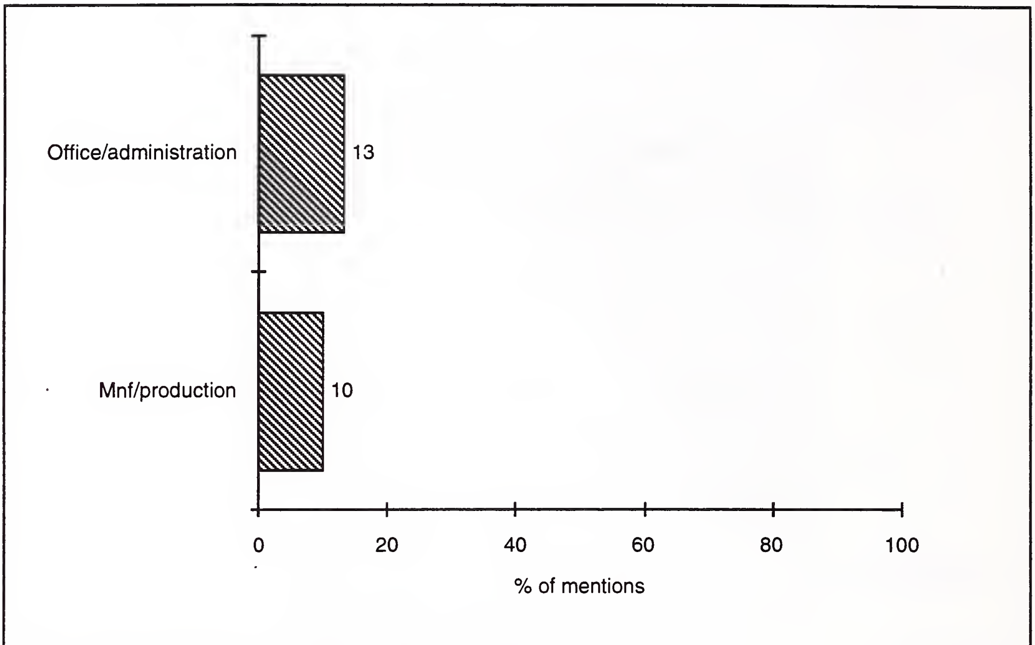


Sample of 30 respondents: multiple answers allowed (Ref:Q3a)

Source: INPUT

Exhibit IV-5

Additional LAN Applications



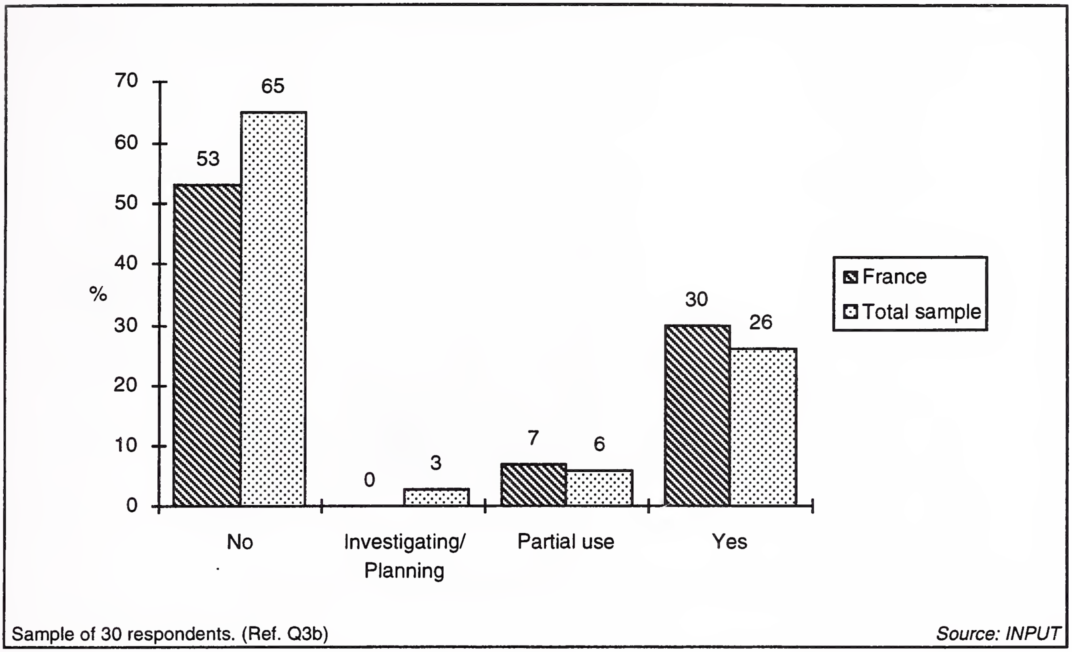
Sample of 30 respondents: multiple answers allowed (Ref:Q3a) *Source: INPUT*

In addition to the applications referred to above in the Exhibits respondents also made individual mention of the following:

- EDI/Electronic trading
- salary and payroll
- back office functions
- Time recording
- Design
- Document exchange
- Integrated fax
- Costing.

Exhibit IV-6

Client 'Loss Impact' Measurement—France



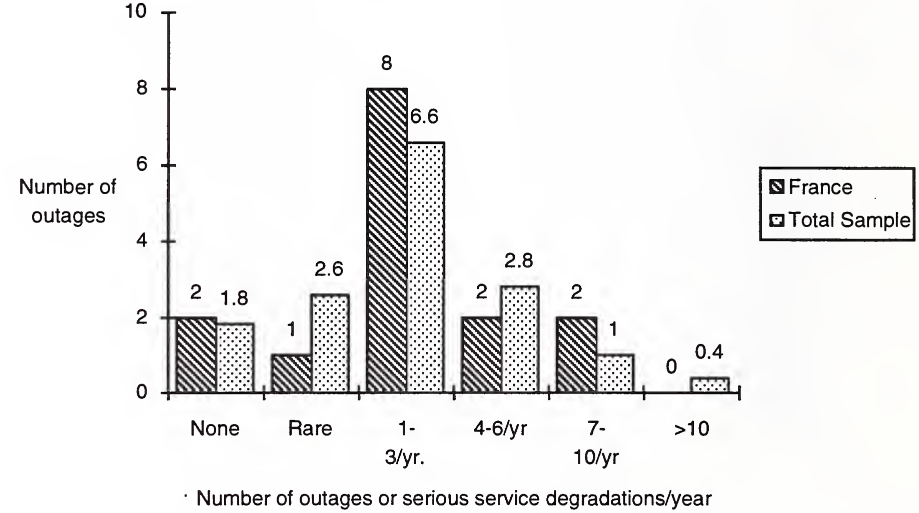
Sample of 30 respondents. (Ref. Q3b)

Source: INPUT

Exhibit IV-7 shows the distribution of LAN outages reported. Only respondents who reported an answer are included in these statistics, for the French sample this amounted to exactly half of the full sample of 30 interviewees.

Exhibit IV-7

Annual LAN Outages — France



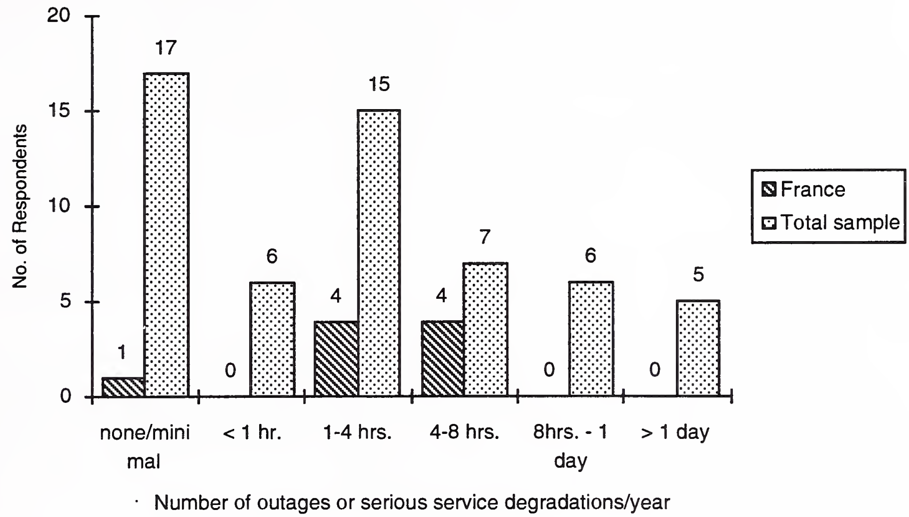
Sample of 15 respondents. (Ref. Q3c)

Source: INPUT

In respect of the duration of outages few respondents were able to provide a clear response. In total 9 of the 30 French respondents gave some information which is analysed in Exhibit IV-8.

Exhibit IV-8

Duration of LAN Outages—France



Sample of 15 respondents. (Ref. Q3c)

Source: INPUT

The French sample reported a total of 3900 LANs, 3460 servers and between 29 000 and 44 000 client PC/workstations in use in 1994. The average for the sample is shown in Exhibit IV-9.

Exhibit IV-9

Desktop/LAN Characteristics—France

Characteristic	France 1994	Total Sample 1994
Avg. No. of Clients	1200	860
Avg. No. of Servers	150	58
Avg. No. of LANs	130	60
Server/LAN Ratio	1.2	1
Client/Server Ratio	8/1	15/1

(Q4a)Source INPUT

Multiple Operating Systems are used as is shown in Exhibit IV-10. An indication of the variety of use can be obtained from this exhibit which shows the percentage of use of each type of operating system reported for both servers and client workstations. Other operating systems sited were Apple Macintosh, Sun and VMS.

Table IV-10

Client Operating System Usage - France

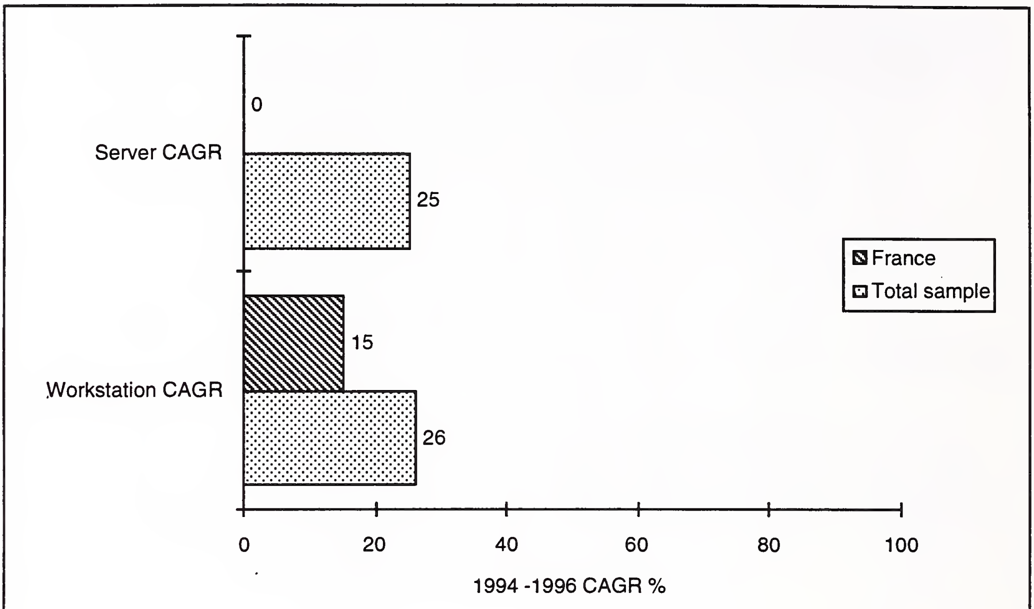
Operating System	% of Servers - France	% of Servers - Total Sample	% of PC/Workstations -France	% of PC/Workstations - Total Sample
MS-DOS	47	46	77	78
UNIX	43	20	57	31
Windows	40	35	67	64
OS/2	20	16	30	28
Windows NT	10	3	0	10
Other	20	13	27	19

(Q5a)Source INPUT

Exhibit IV-11 provides some indication of the expected growth in the LAN environment according to the French sample.

Exhibit IV-11

Server/Workstation Growth Rates



Sample of 30 respondents: multiple answers allowed (Ref:Q4a)

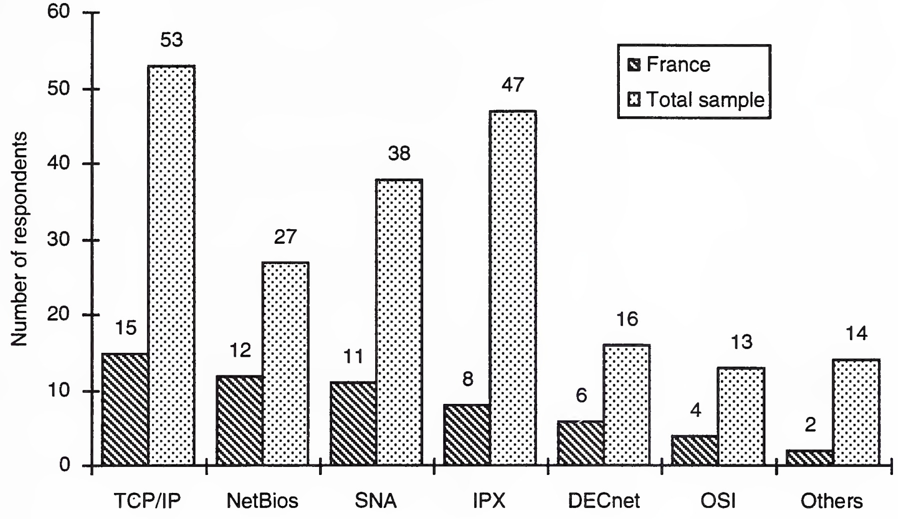
Source: INPUT

Sixty percent of the French sample reported using multiple communications protocols at the desktop, the distribution across the different types being shown in Exhibit IV- 12.

The extent to which multiple protocols were being used amongst the French sample is shown graphically in Exhibit IV-13.

Exhibit IV-12

Usage of Communications Protocols — France

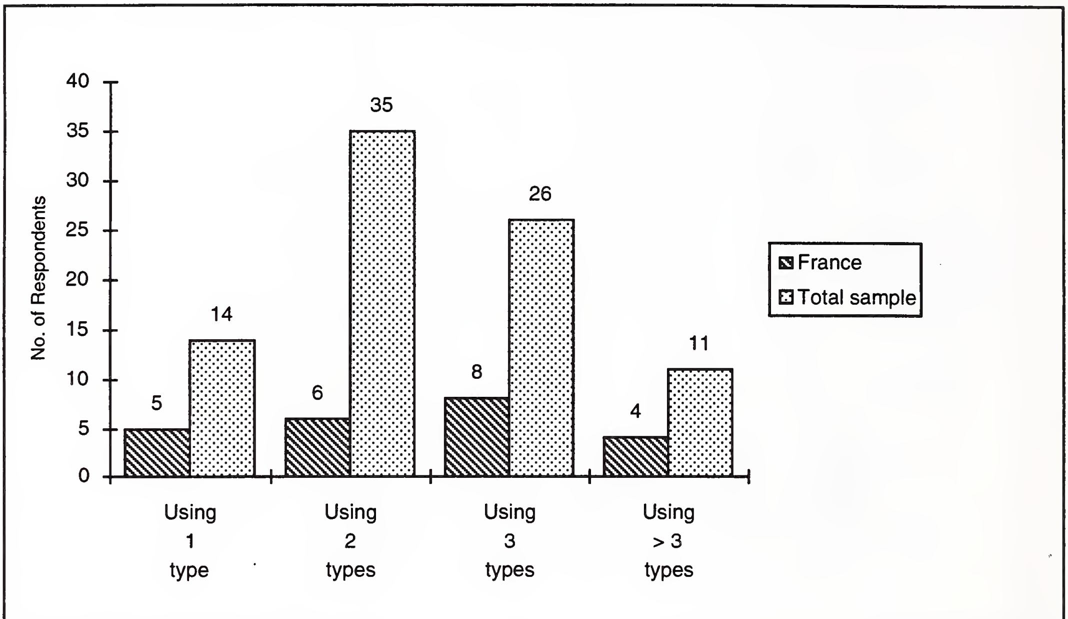


Sample of 30 respondents. (Ref. Q6b)

Source: INPUT

Exhibit IV-13

Incidence of Multiple Protocols — France



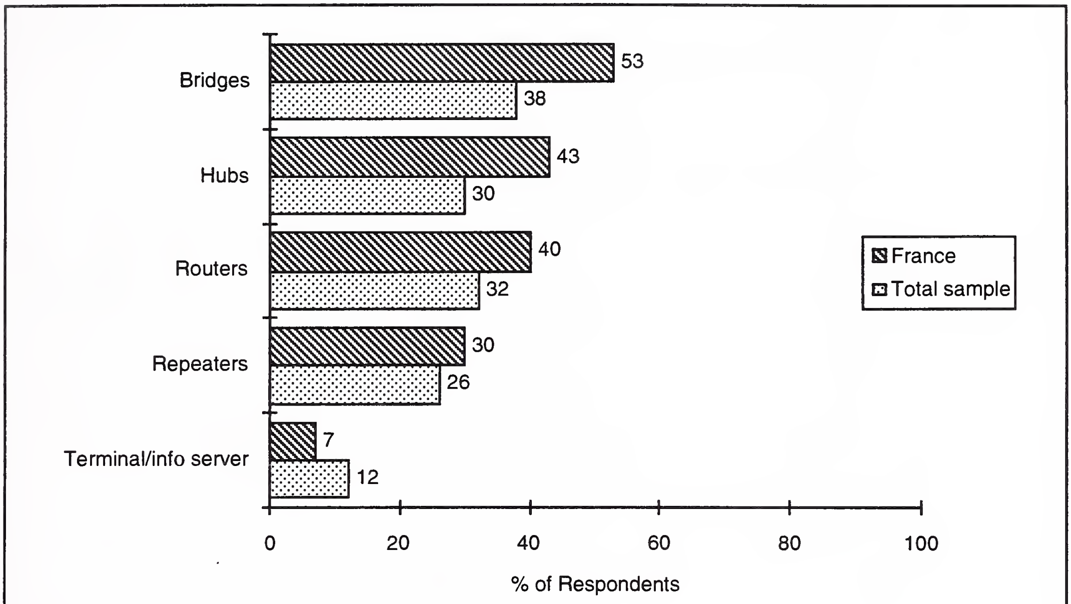
Sample of 23 respondents. (Ref. Q6b)

Source: INPUT

The usage reported of inter-networking devices is shown in Exhibit IV-14 for the French sample. The *other* category included mentions of MUX servers, LAN extensions and other controllers including Ethernet controllers.

Exhibit IV-14

Inter-networking devices used



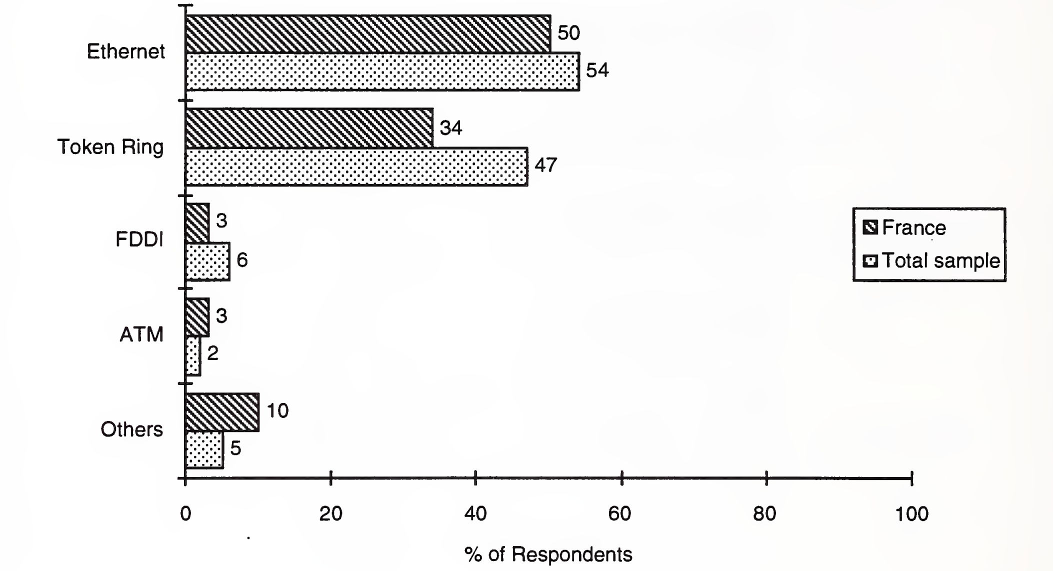
Sample of 30 respondents. (Ref. Q6c)

Source: INPUT

Exhibit IV-15 indicates the percentage of the different types of LAN installed in the French sample. Respondents were also asked to provide an indication of the types of LAN they expected to have installed in two years time. Their responses indicated no significant difference from those given for 1994.

Exhibit IV-15

Types of LAN Currently Installed

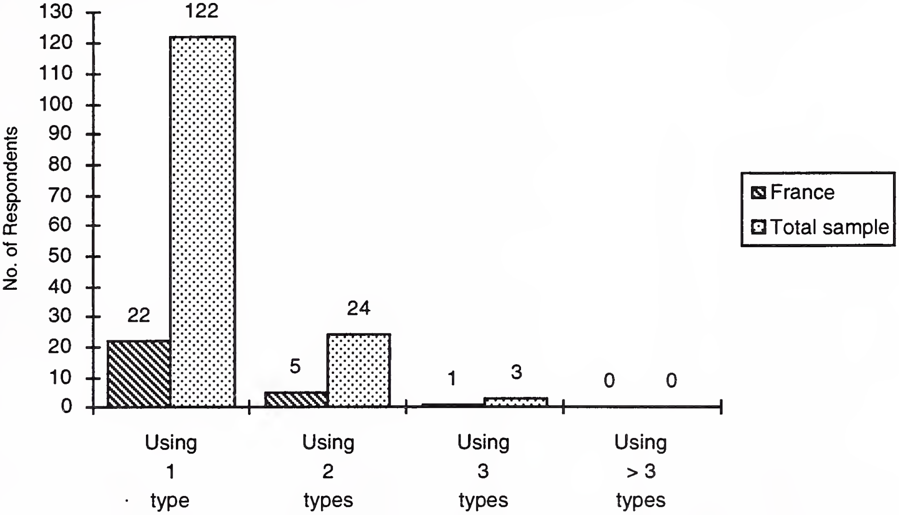


Sample of 30 respondents: multiple answers allowed (Ref:Q4a)

Source: INPUT

Exhibit IV-16

Incidence of Multiple LAN Types — France



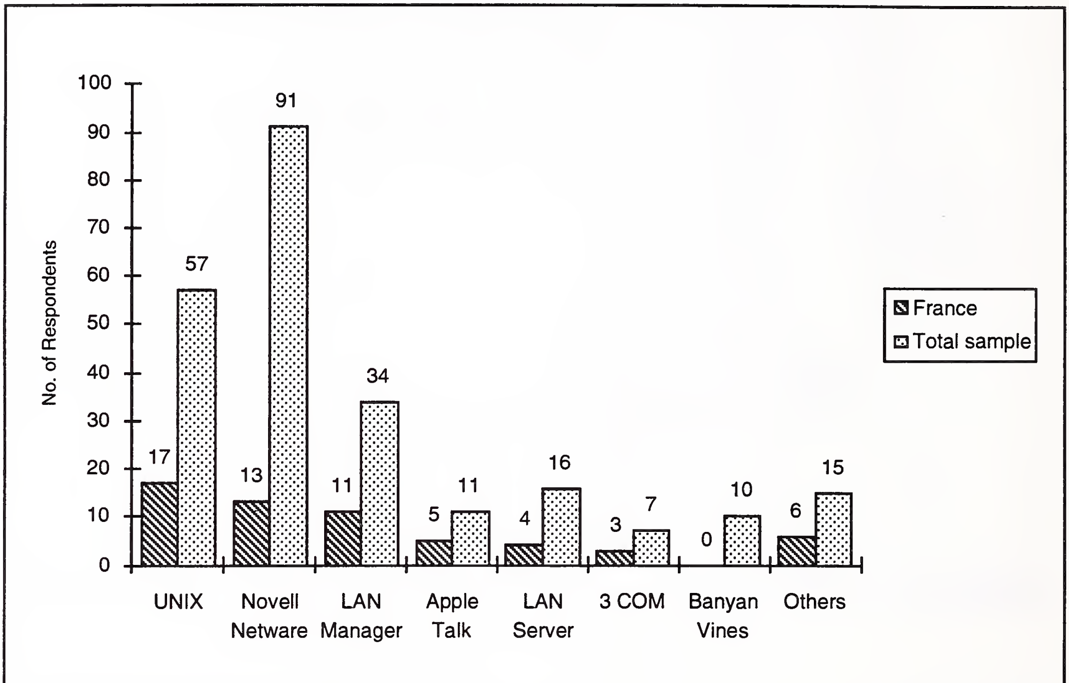
Sample of 28 respondents. (Ref. Q4a)

Source: INPUT

Exhibit IV-17 indicates the proportions of different types of network operating systems in use reported by the French sample. The only named operating system included in the *other* category was HPUX. Respondents reported the use of multiple operating systems, the proportions being indicated in Exhibit IV-18.

Exhibit IV-17

Types of Network Operating System Used —France

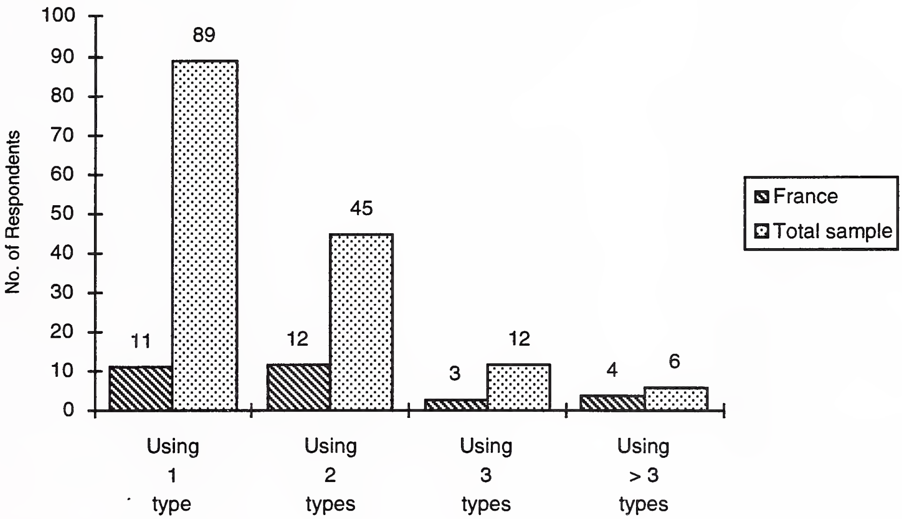


Sample of 30 respondents. Multiple responses. (Ref. Q4b)

Source: INPUT

Exhibit IV-18

Incidence of Multiple Network Operating Systems — France



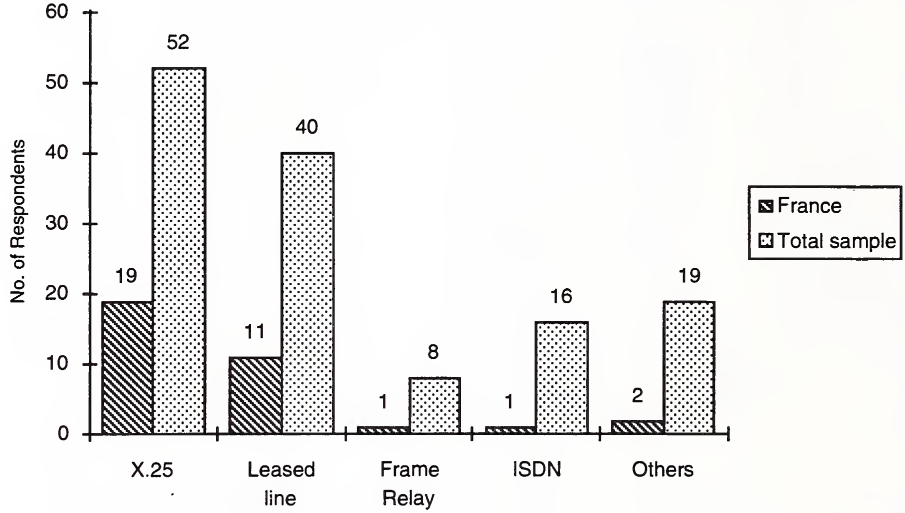
Sample of 29 respondents. (Ref. Q4b)

Source: INPUT

Exhibit IV-19 shows the proportions of different types of WAN interfaces in use, clearly some incidence of multiple usage occurs in this area as well. Respondents who reported other types simply referred to the carrier citing AT&T and France Telecom. The incidence of multiple use is plotted in Exhibit IV-20 below, 7 of the sample of 30 reported only using one type.

Exhibit IV-19

Types of WAN Interface Used — France

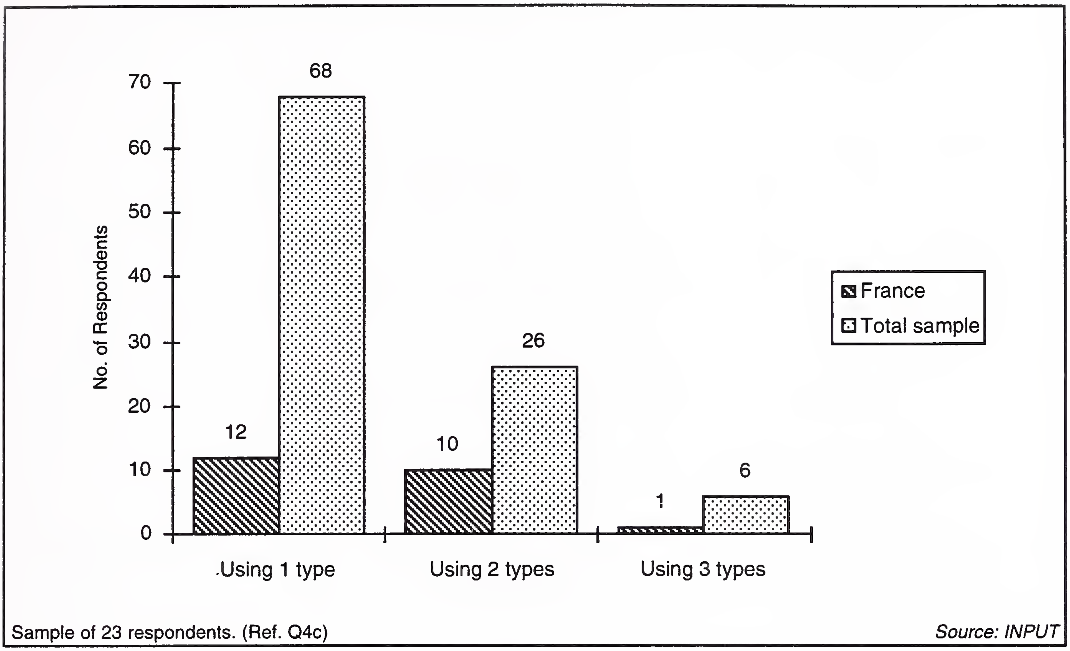


Sample of 30 respondents. Multiple responses. (Ref. Q4c)

Source: INPUT

Exhibit IV-20

Incidence of Multiple WAN Interfaces Used — France



Sample of 23 respondents. (Ref. Q4c)

Source: INPUT

Comments by respondents on the changes envisaged in the LAN operations environment are listed in Exhibit IV-21 below. An analysis of these comments indicates a strong bias towards sustained expansion and growth of LANs in France. The change profile is shown in Exhibit IV-22 for France and a comparison to the overall sample is provided in Exhibit IV-23.

For those few respondents that reported minimal change the reasons cited included:

- Public spending constraints
- Financial constraints
- Difficulty in justifying costs
- Little further applications potential envisaged.

Few comments were proffered by respondents concerning any other changes expected in the IS (information systems) environment. Unsurprisingly the only comments made related to moves to open systems.

Exhibit IV-21

difficult to say - public authorities are slow

don't expect many changes

LANs will increase, both in size & importance

LANs will continue to grow

very major growth/strategic direction

moving towards LANs being the only option

User Comments Concerning Changes in the LAN Operations Environment — France

on-going LAN development

slight growth

very considerable growth

as a major LAN site, committed to this route

none really

continual LAN investment

slight increase

not yet known

small increase - optimising current systems

only expect slight growth in LAN size

change inevitable - respondent's organisation will not grow much more at early stages of implementation, so will no doubt increase

should grow by about 50%

difficult to know

continued expansion of LAN connectivity

stabilising

plan is to integrate all applications onto LAN

more applications will move to the LAN

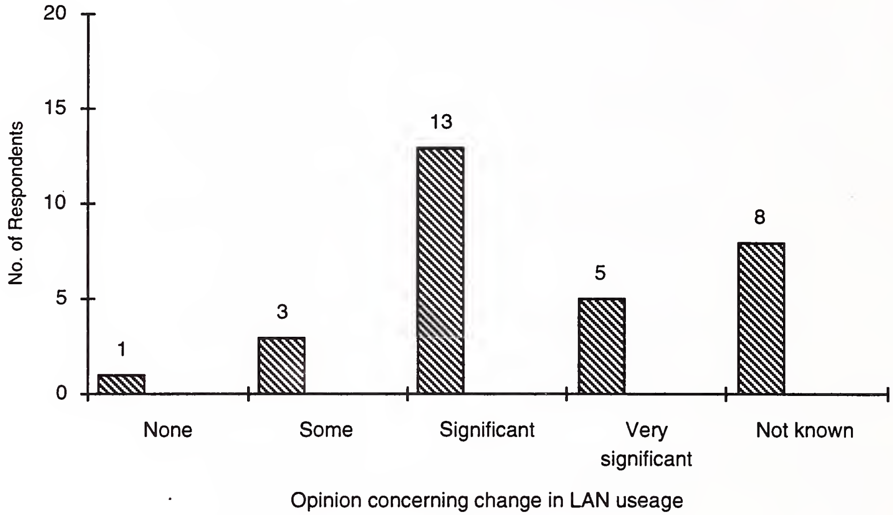
little change

nothing major

obviously - growth

Exhibit IV-22

Expected LAN Change Profile — France

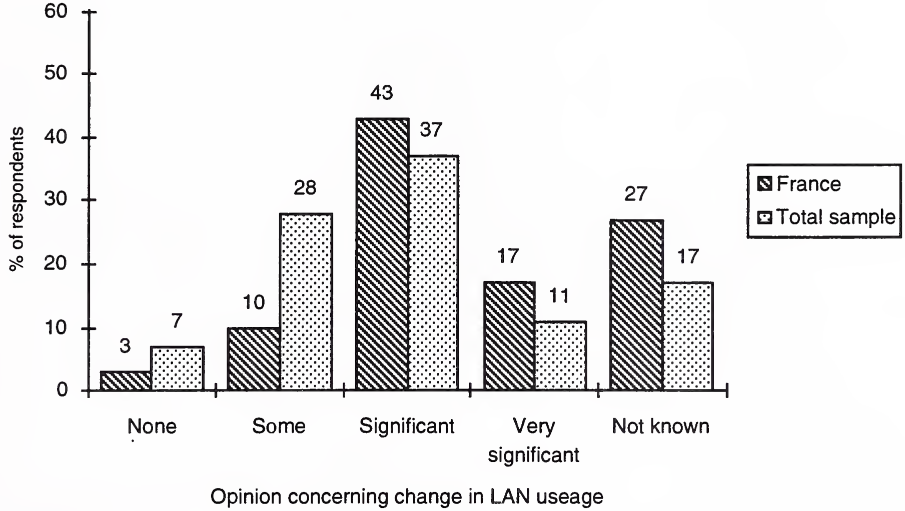


Sample of 30 respondents. (Ref. Q7a)

Source: INPUT

Exhibit IV-23

Comparative LAN Change Profile — France



Sample of 15 respondents. (Ref. Q7a)

Source: INPUT

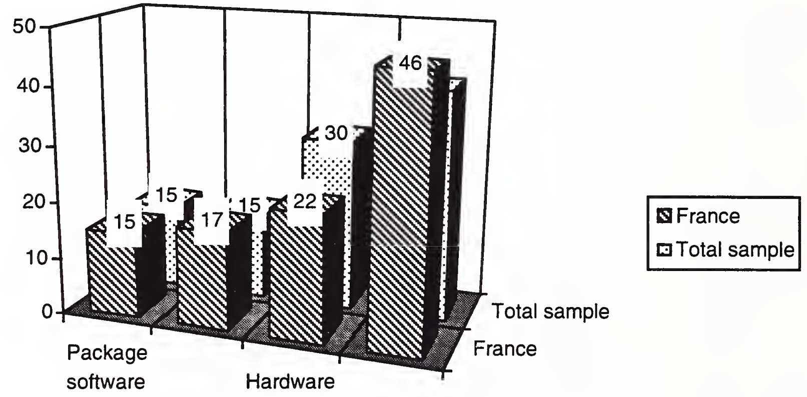
Respondents provided data on the principal constituents of their LAN expenditure currently and this is shown in Exhibit IV-24. Respondents were unable to give any meaningful information concerning the likely growth trends for the different aspects of expenditure on LANs.

In total the French sample represented expenditure on LANs of 41.7 MFF or $7.4 million for the 17 respondents that provided data. This represents an average annual LAN expenditure of approximately $430k per organisation.

Respondents were also asked to express an opinion concerning the adequacy of their current LAN budget. Their responses are analysed in Exhibit IV-25. The average rating for the French sample was 3.2 (the same as for the total sample), indicating that there exists significant levels of dissatisfaction with the budget levels set for this activity.

Exhibit IV-24

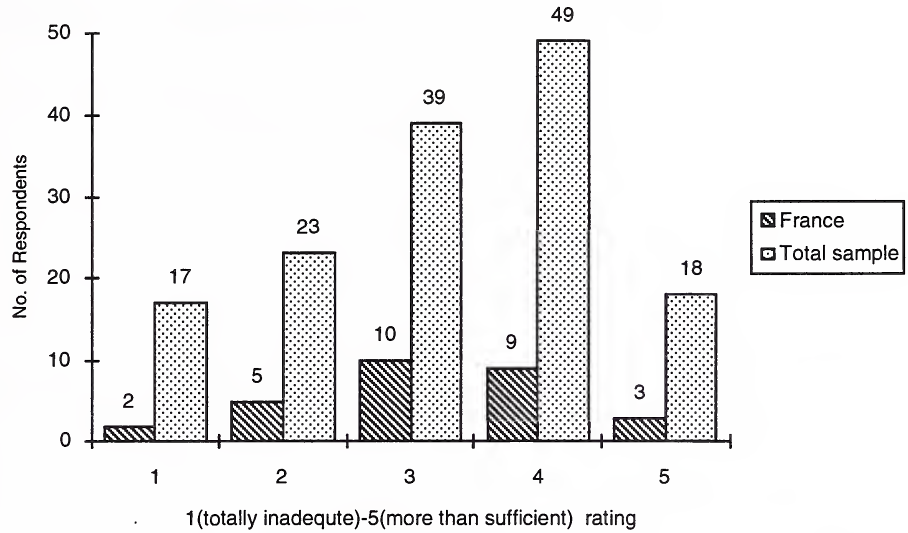
Expenditure on LAN Systems



Sample of 30 respondents: multiple answers allowed (Ref:Q4a) *Source: INPUT*

Exhibit IV-25

Adequacy of LAN Budget—France



Sample of 29 respondents. (Ref. Q8b)

Source: INPUT

Exhibit IV-26

Role of the User Department—France

LAN is used by technical staff - self-supportive

each branch/dept responsible for basic support/fault-reporting - no change

none - no change

each user is assigned a PC support resource

depts have basic supporting roles, backed up by IS dept

provide full support role at this location

each business sector has its own supporting role provide basic self-help facilities/operator errors/small technical problems

none - no change likely

branches - none/HO divisions have some in-house tech skill - no changes

none - no change

systems administration & fault-reporting - no change

user support structure in place - no change

fault-reporting only - DK if will change

limited to basic faults - DK if will change

none - no change

discrete businesses responsible for own supporting functions - DK if change

none - application knowledge/basic fault-redeeming (nothing technical)

none - no change

able to support systems administration problems - no change

would not see users playing a major role

organisation has 5-6 main sections - each supports own LANs

none

basic systems administration - no change

operating & straight-forward administration - no change

design tend to be left alone & liaise directly with supplier - DK if change

do not really support their own systems

each principal dept has responsibility for day-to-day support

highly skilled in operational duties - no change

no support role

Exhibit IV-26.1

Role of the IS Department—France

IS is user!

central help desk & vendor contact - no change

every aspect of support co-ordinated through IT dept - no change

management of the PC support units

overall control of support and development

central IT function (other location) - more strategy/new development than support

central IT chooses op. system, protocols & has responsibility for S/W development

first line of call/if cannot solve problem, refer to supplier

central IS support of all internal systems - no change likely

fault-reporting & monitoring - no proposed change

DP section responsible for all IT support - no change

central IS provides monitoring/network tuning/configuration - no change

LAN support unit - no change

support all IT systems - would change improve the support?

have the resource for LAN support - DK if will change

all support channelled through IS - no change

monitoring/integration issues; development/supplier procurement - DK if change

all LAN support through IT dept

provide on-site operating system/application support - no change

2nd line function - if cannot rectify, inform IBM

MIS dept would be responsible for all LAN support

integration & development service

responsible for all systems support & contact with supplier

central help desk - no change

provide systems & application support - unlikely to change

some limited tech support on H/W & netware, but not S/W - DK if change

all support functions

assists in v. technical issues, SI & strategy

support both networks plus maintain external connections

small IT dept which maintains all systems/HO offers resource when required

B

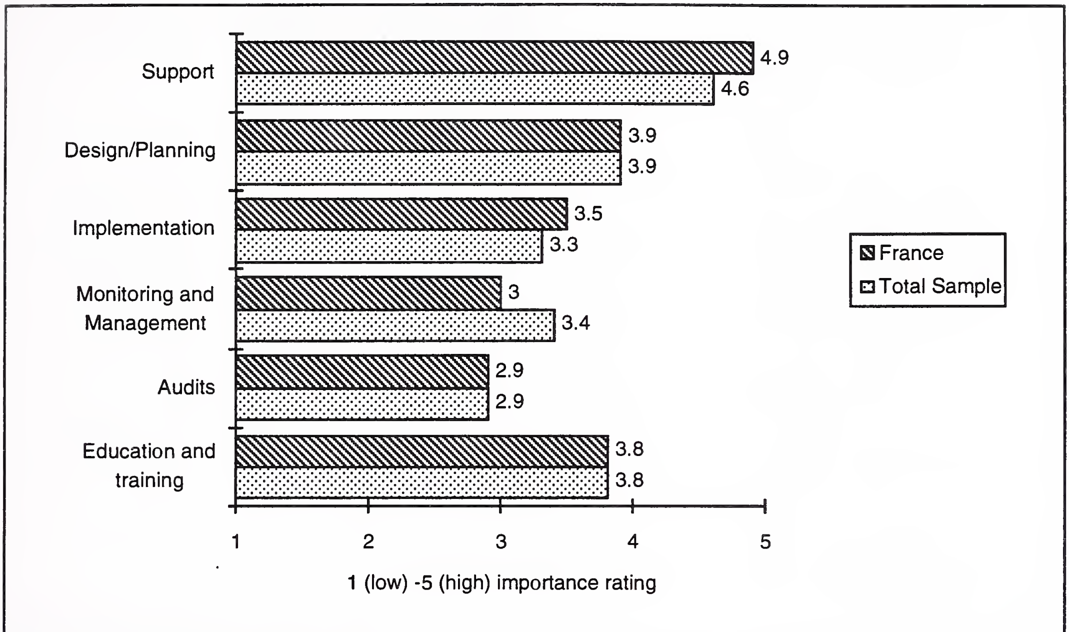
LAN Support Services

1. Key LAN Services

Exhibit IV-27 shows the importance ratings for the various LAN related services that can be provided to the user' site for the French sample.

Exhibit IV-27

Importance of LAN Support Services



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

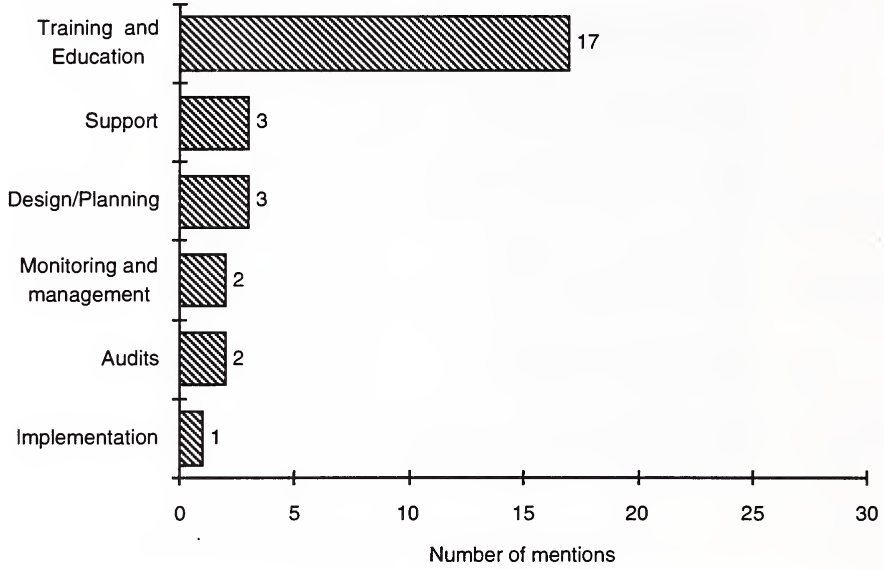
2. Responsibility Profiles

Exhibit IV-28 shows the profile for the various LAN related services that respondents reported were the responsibility of the workgroup. Exhibit IV-29 provides a comparison of the French profile with that for the total sample in percentage terms.

Exhibit IV-30 and 31, and Exhibits IV-32 and 33 show respectively those for the IS group and for independent third-party vendors.

Exhibit IV-28

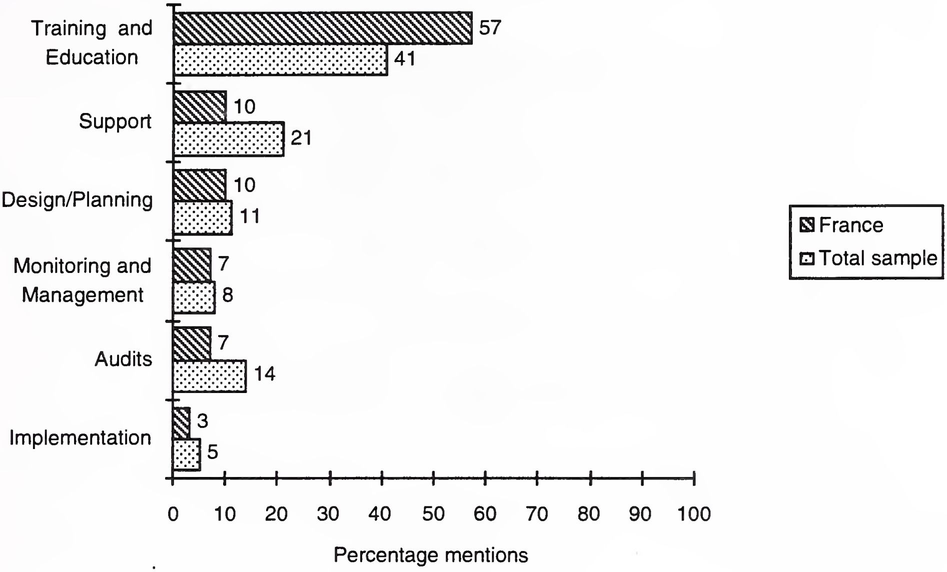
Workgroup Responsibility Profile—France



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Workgroup Responsibility Profile Comparison—France

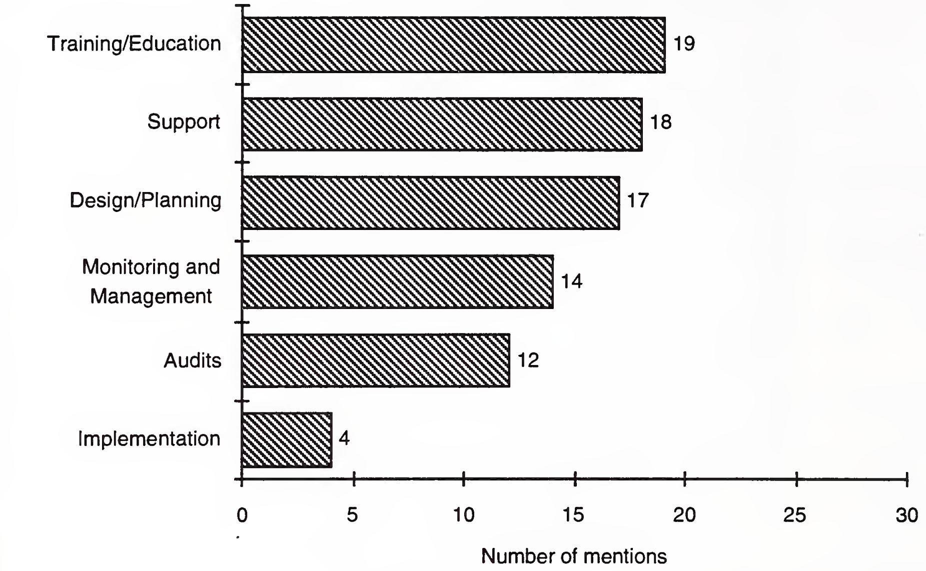


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit IV-30

IS Responsibility Profile—France

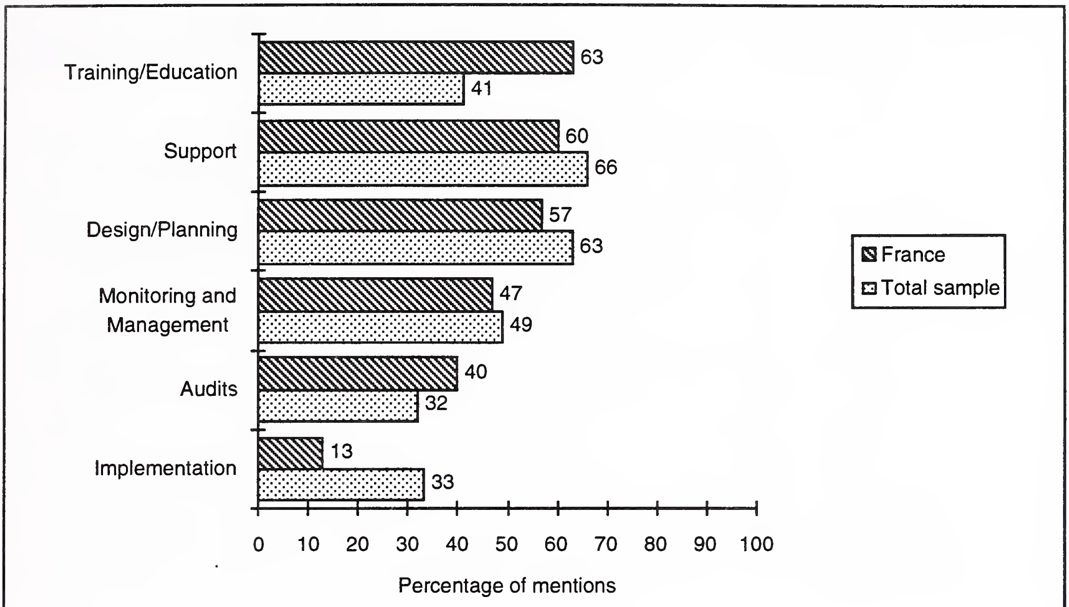


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit IV-31

IS Responsibility Comparative Profile—France



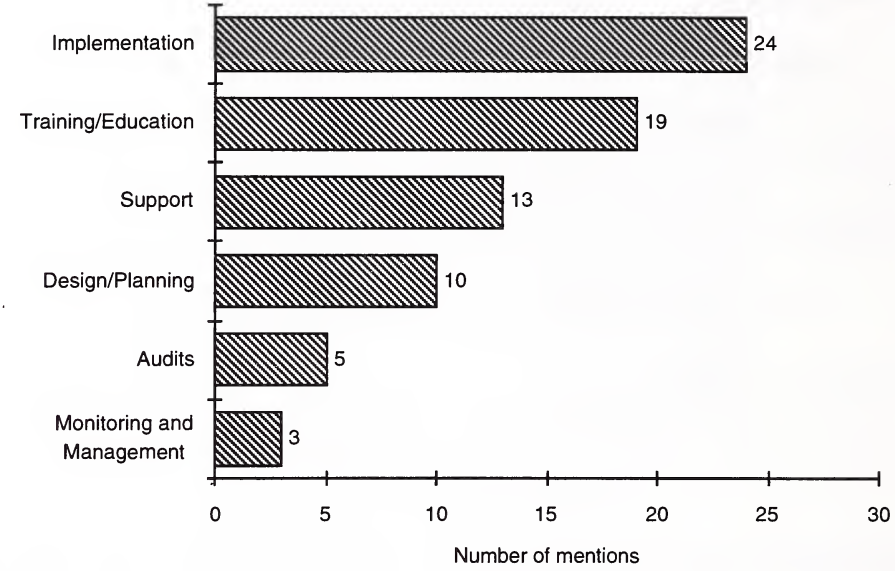
Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit IV-32

Exhibit IV-32

External Vendor Responsibility Profile—France

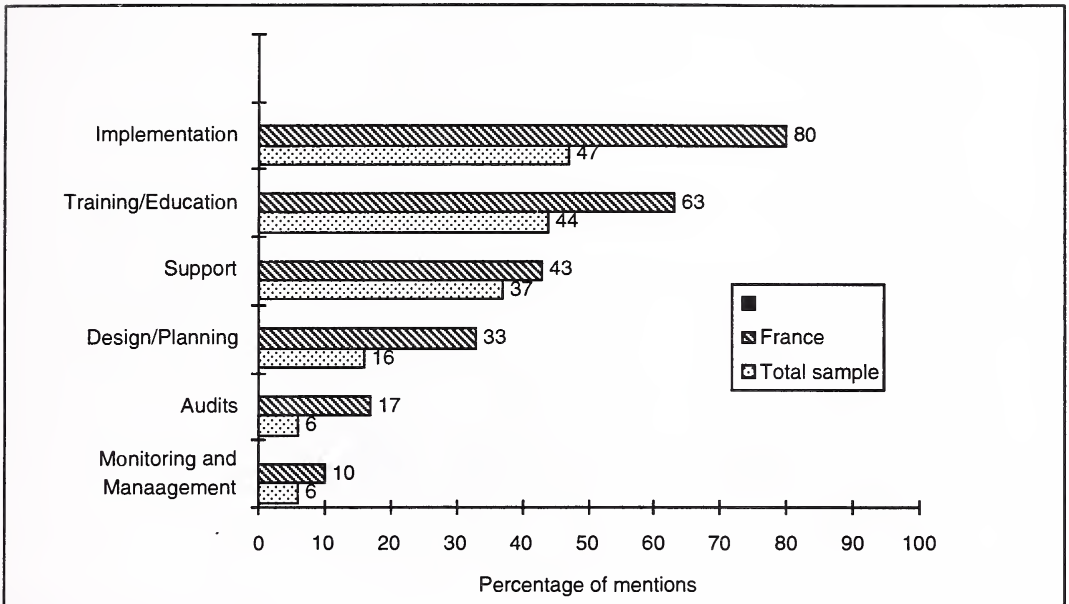


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit IV-33

External Vendor Responsibility Profile—France



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

3. LAN Service Areas

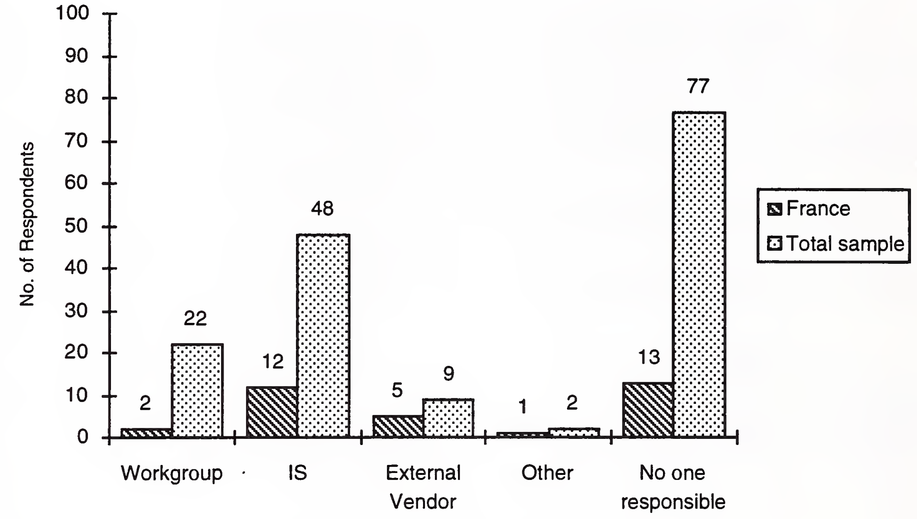
a. Audits

The overall importance rating for this activity was low for the French sample at 2.9.

Exhibit IV-34 shows the responsibility profile for the LAN/desktop audit function.

Exhibit IV-34

LAN/Desktop Audit Function Responsibility Profile — France



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

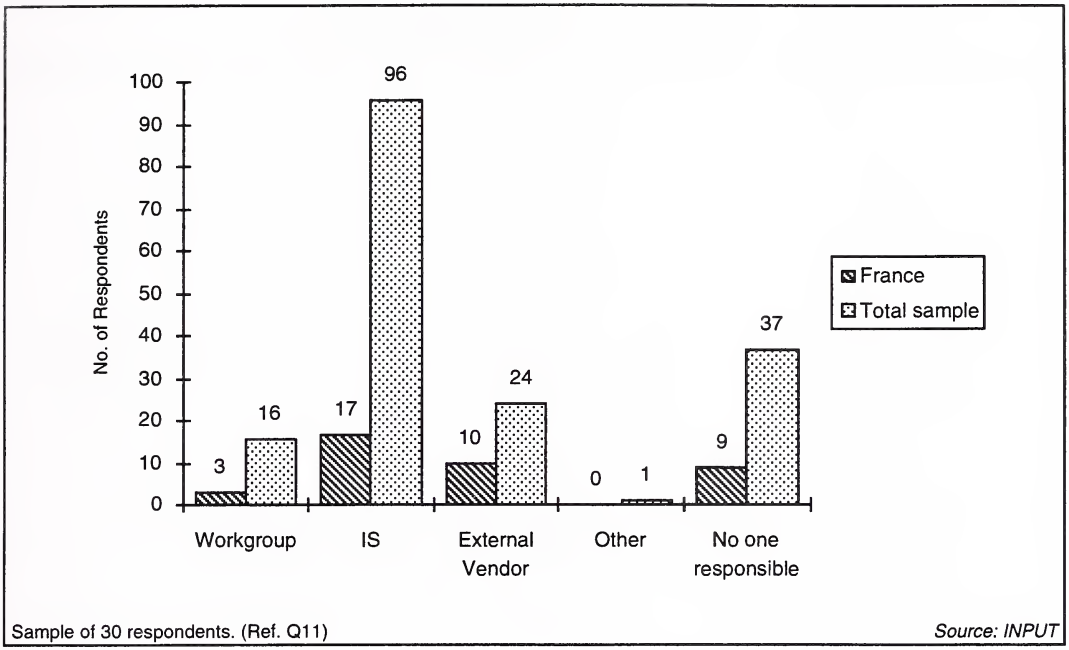
b. Design and Planning

The overall importance rating for this area was relatively strong at 3.9.

Exhibit IV-35 shows the responsibility profile for the LAN/desktop design and planning function.

Exhibit IV-35

LAN/Desktop Design and Planning Function Responsibility Profile — France



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

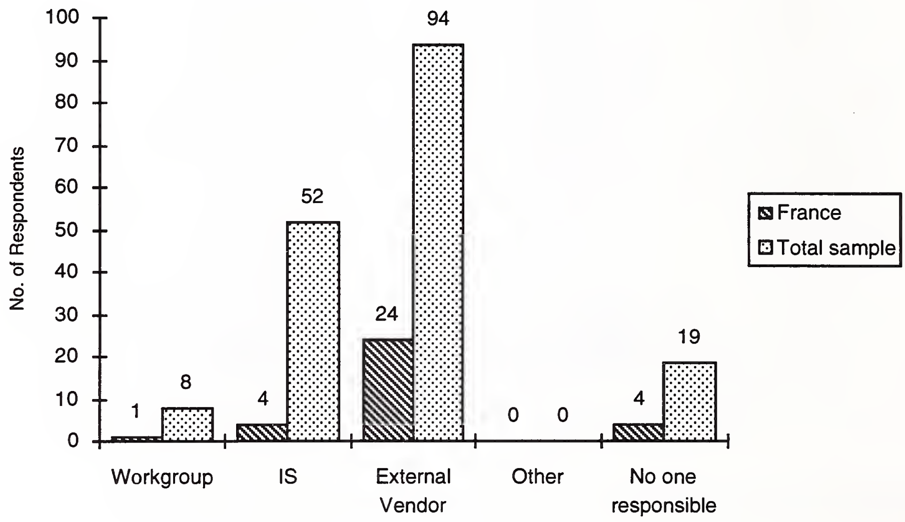
c. Implementation

The overall importance rating for this area was 3.5.

Exhibit IV-36 shows the responsibility profile for the LAN/desktop implementation function.

Exhibit IV-36

LAN/Desktop Implementation Function Responsibility Profile — France



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

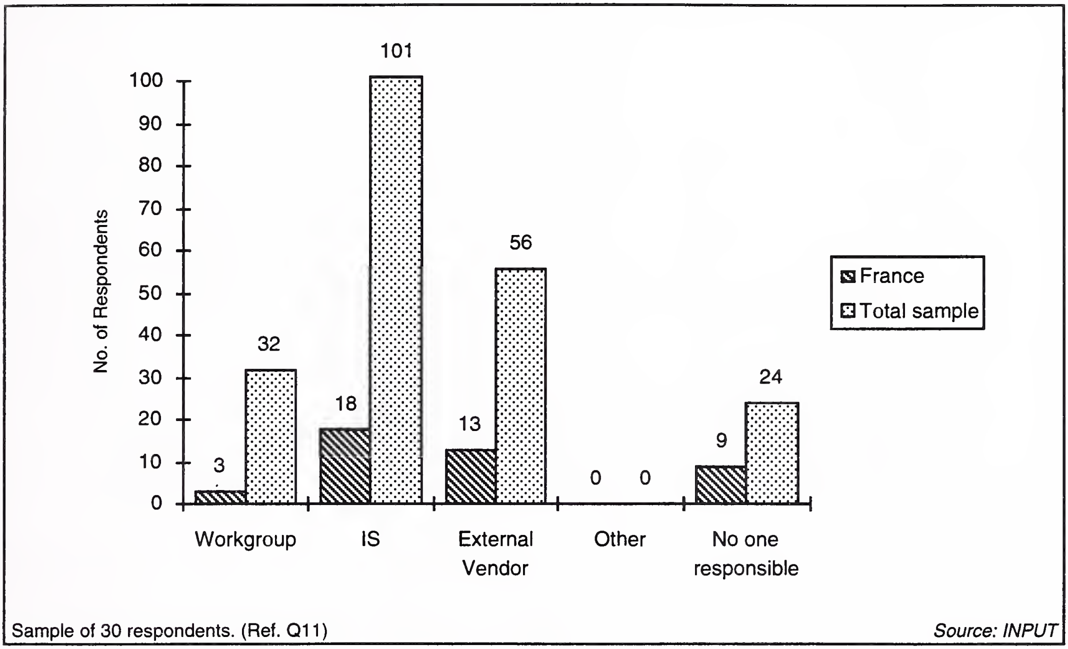
c. Support

The overall importance rating for this area was 4.9 for the users who gave a response on this question. Interestingly 9 of the 30 people interviewed did not provide a rating for this activity.

Exhibit IV-37 shows the responsibility profile for the LAN/desktop support function.

Exhibit IV-37

LAN/Desktop Support Function Responsibility Profile — France



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

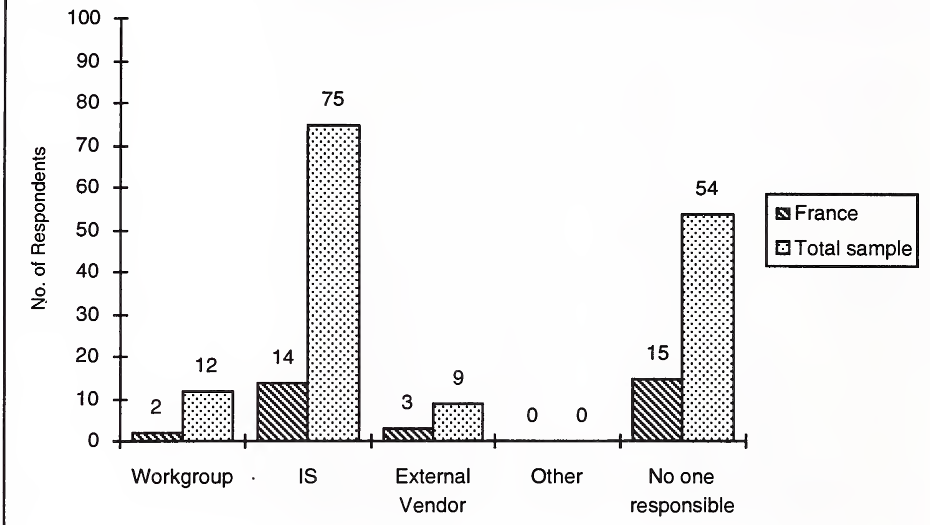
d. Monitoring and Management.

The overall importance rating for this area was a very moderate 3.0.

Exhibit IV-38 shows the responsibility profile for the LAN/desktop monitoring and management function.

Exhibit IV-38

LAN/Desktop Monitoring and Management Function Responsibility Profile — France



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

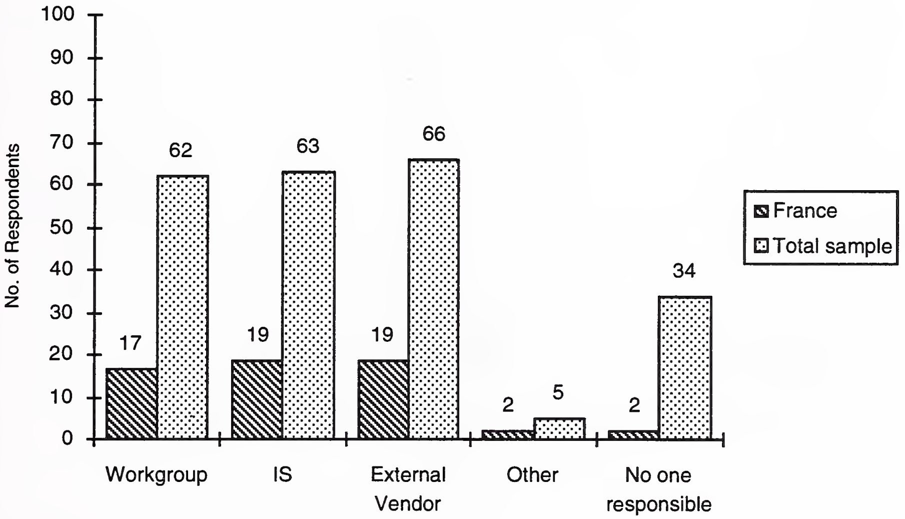
e. *Training and Education*

The overall importance rating for this area was a relatively strong 3.8.

Exhibit IV-39 shows the responsibility profile for the LAN/desktop education and training function.

Exhibit IV-39

LAN/Desktop Training and Education Function Responsibility Profile — France



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

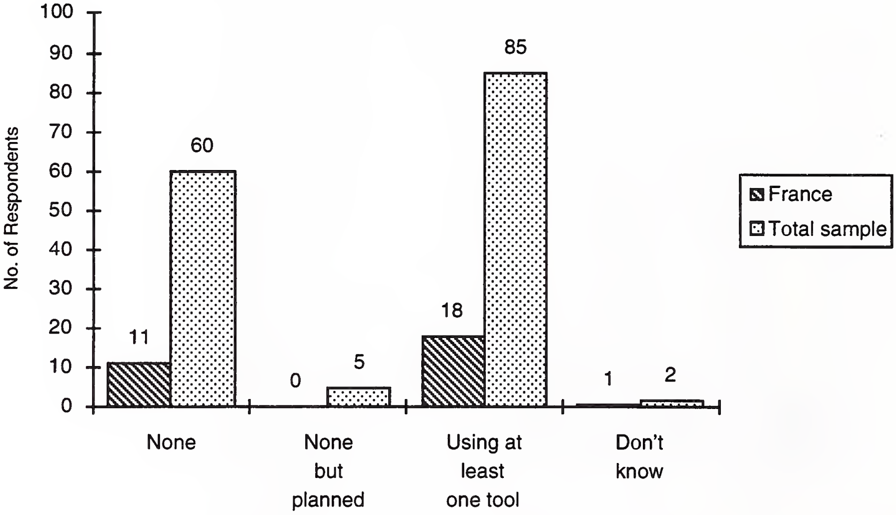
f. Methodologies and Tools

In connection with the monitoring and management function for the LAN respondents were also asked to state what management methodologies or tools they were using for automating any of the functions reported on in sub-sections *a.* through *e.* above.

The extent to which they were using tools or methodologies at all is shown in Exhibit IV-40 below.

Exhibit IV-40

LAN/Desktop Methodologies and Tools Usage — France



Sample of 30 respondents. (Ref. Q12)

Source: INPUT

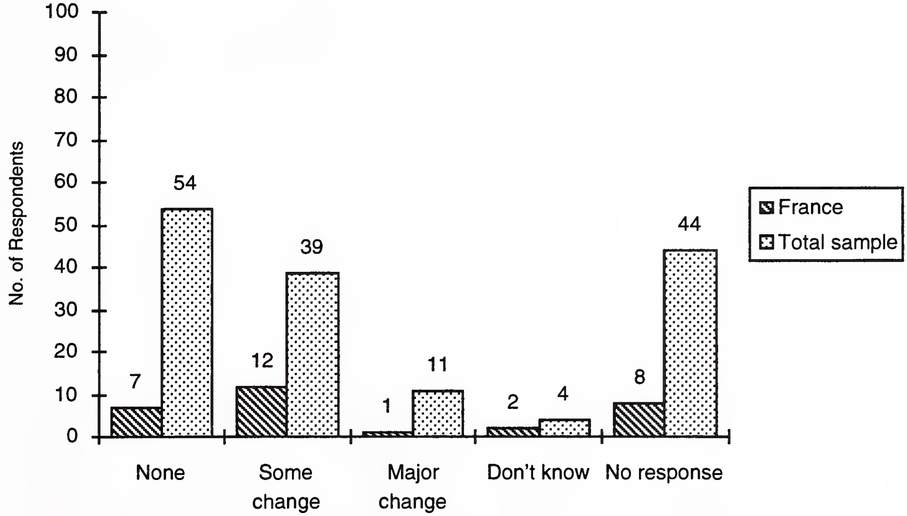
The most commonly mentioned tools in use with two mentions each were QA and Lotus Agenda. Also mentioned were spreadsheet tools from Microsoft and Borland, Timeline, SuperProject and Powerpoint.

g. Anticipation of Change in LAN/Desktop Environment

The overall picture obtained from the French sample was one where little significant change was expected in the LAN environment in the foreseeable future, i.e. over the next two years. Exhibit IV-41 shows the histogram of responses in respect of anticipated change.

Exhibit IV-41

Anticipated Change
LAN/Desktop—France



Sample of 30 respondents. (Ref. Q12)

Source: INPUT

Some insights into the reasons for change, or lack of anticipated change, in the LAN/Desktop support environment are provided by the user comments listed in Exhibit IV-42 below.

Exhibit IV-42

Reasons for Lack of Change in the LAN/Desktop—France

public authorities slow to change

tend to work in 5 year cycles/major changes would occur then

what changes? - why change if it works reasonably well?

user support structure to remain but LAN management/monitoring may change (contracted out?)

seek to achieve best support (in-house/ext.) but not rule out outsourcing (like other Govt depts)

have installed most systems/would need major HO policy change

will double LAN capacity over next 2 years

change would depend on a particular service level deteriorating

always review operations every 4-5 years

no idea! (maybe 1997 +)

how would we benefit in changing anything?

not expect front-line support to change - big area for improvement is performance/LAN mngmt

determined by growth

changes expected in 4 - 5 years time (new installation now)

too early - only at evaluation stage

there is a central budget & each section has spending powers

small network/no expected change over next 4-5 years

Digital actively promoting value-added services but LAN too small/depends on speed of growth

change would depend on LAN becoming preferred route for other depts

only a small installation

major changes must be part of a coherent strategy

depends upon strategy adopted by the group

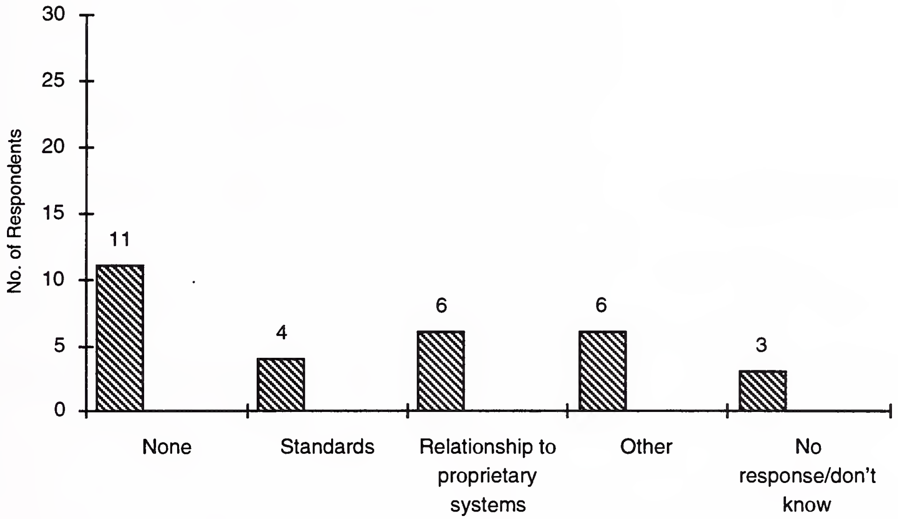
Sample of 30 respondents. (Ref. Q12)

Source: INPUT

Respondents were also asked to comment on the potential barriers they perceived to the more successful use of LAN technology, Exhibit IV-43 shows an analysis of their responses.

Exhibit IV-43

Barriers to Using LAN/Desktop Technology — France



Sample of 30 respondents. (Ref. Q14a)

Source: INPUT

The other category included the following responses:

- The need for companies to change their commercial processes and policies
- Inadequate security
- Faster data access
- Difficulties in developing coherent strategies

- Over expectation for the capabilities of the PC
- Decisions migrating to autonomous decentralised departments.

The principal observations that emerged from the French sample in respect of plans for dealing with all of these problems can be summarised as follows:

- Adoption of policies and standards for LAN installations including the use of open systems
- Adopting application protection features that utilise the latest technology and new developments in data structures
- Improving and increasing LAN connectivity.

C

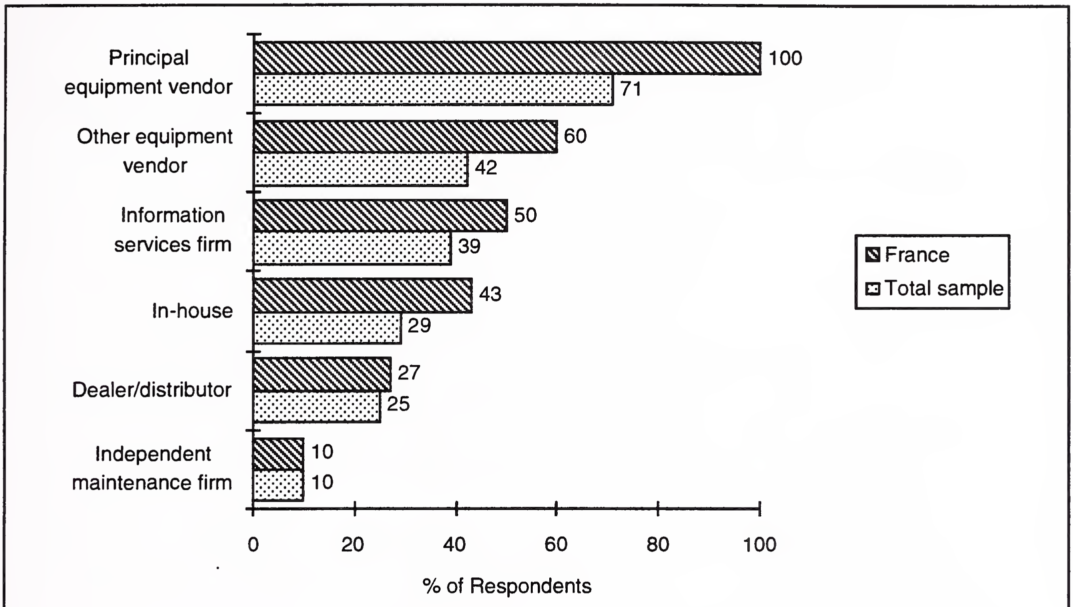
Use of Service Vendors

1. Current Use of Vendors

Exhibit IV-44 shows the distribution for the French sample in respect of vendor supply of LAN related support services.

Exhibit IV-44

Providers of LAN Support Services - France



Sample of 30 respondents. Multiple responses. (Ref. Q15a) *Source: INPUT*

Some further appreciation of the types of services provided by vendors can be obtained from the listing of user comments included in Exhibit IV-45.

Exhibit IV-45

Types of LAN/Desktop Services Provided by External Vendors- France

hardware, netware & some bespoke services

eqpmt & periph supply/datacomms eqpmt & servs/consultants for planning & reviews

all comms needs, network connectivity, operating environment, dbase dev & utilities

all types of services - network design/project control/installation & site services all types of services - network design/project control/installation & site services

IBM/Bull main vendors of many products/services (they in turn sub-contract)

integration/network connectivity

LAN design & configuration/supporting services/project mngmt & new systems implementation

implementation & site services/diagnostics & systems audits

presently supplying limited services as LAN is small

all hardware & provision of PC & network services

installation/on-site support/remote connectivity/disaster recovery

between them, they supply all services which are contracted out

most outsourced services - design/support/data management/optical storage/network services

Bull principal vendor - advises on most aspects of installation

hardware/workstations/software installation & training/proj mngmt/comms/utilities/op. systems/dev tools

most external services provided by IBM or their resellers

operating system licences & updates; implementation & design/support functions; development tools

most of contracted out services

provision of turnkey system

mostly everything

will provide all requirements to implement/support a LAN solution

LAN technology/cable infrastructure

turnkey system supplied by IBM/IBM agent provides & supports S/W applications

implementation and supporting services

Digital provided H/W, operating systems, site survey & cabling provide full system & supporting services

support - software applications mainly

hardware/operating systems/software & basic comms equipment

hardware & software support/training/implementation of new applics/networking/modems/comms software

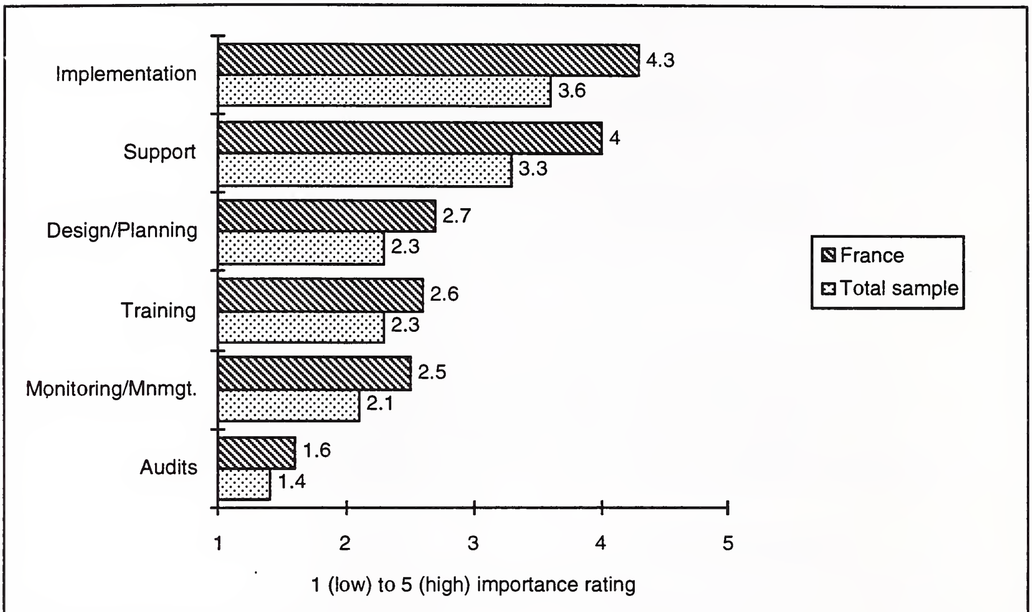
mostly S/W & H/W services; most network products/services resourced internally or from HO

2. Likelihood of Using External Vendors

Exhibit IV-46 shows the distribution for the French sample in respect of the likelihood of using vendors to supply LAN related support services.

Exhibit IV-46

Likelihood of Using External Vendor Services — France

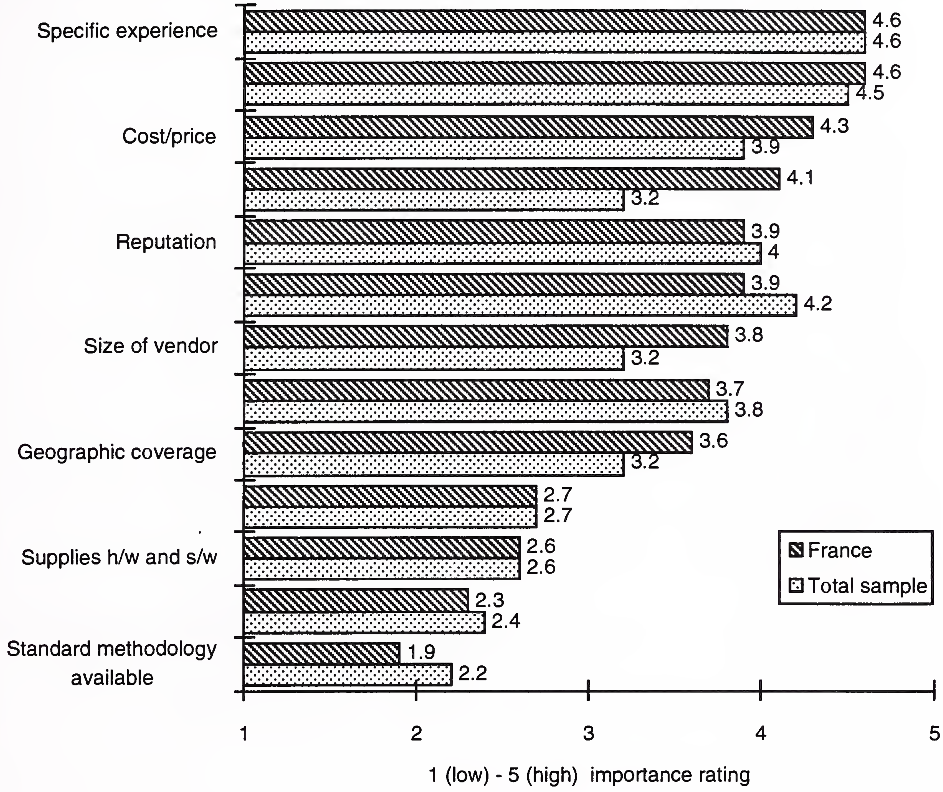


Sample of 30 respondents: (Ref:Q16) *Source: INPUT*

The criteria most favoured by users for selecting the use of external vendors for LAN/Desktop support are indicated in Exhibit IV-47.

Exhibit IV-47

Criteria for Selecting External Vendor Services — France



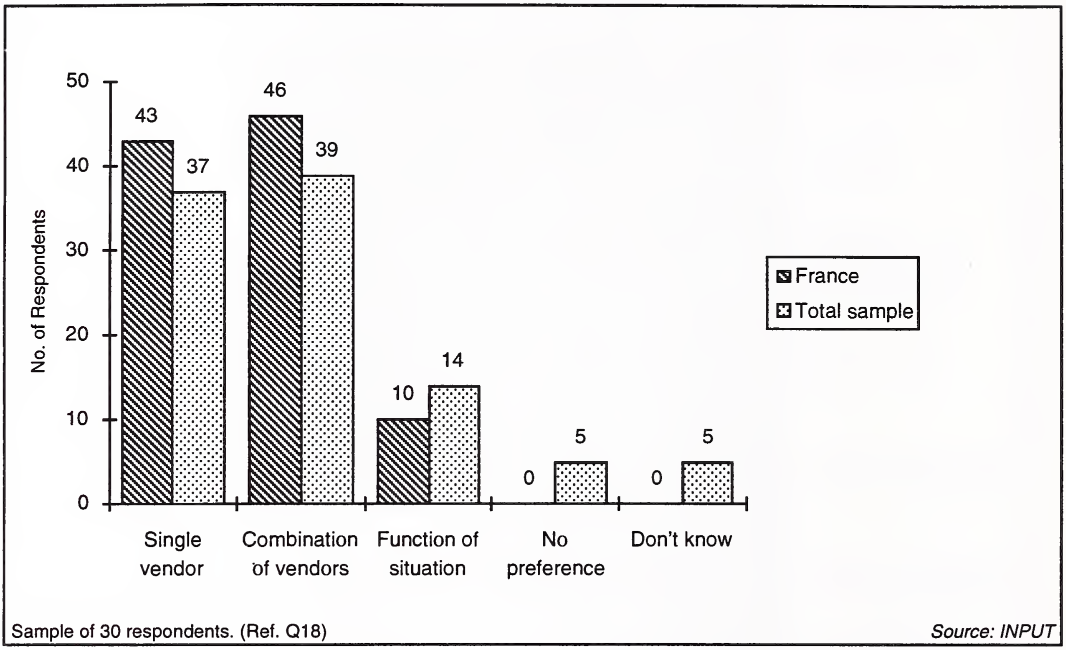
Sample of 30 respondents: (Ref:Q16) *Source: INPUT*

Other criteria mentioned by users included the vendor's WAN and general data communications experience, their position as a solutions supplier, capability to warrant equipment and the choice of preferred suppliers.

Respondents were questioned about their preferences in relation to the use of single generalist suppliers or for the use of a number of specialist vendors to support LAN services. Responses to this issue are analysed in Exhibit IV-48.

Exhibit IV-48

User Preference for Single or Multiple Specialist Vendors — France



Sample of 30 respondents. (Ref. Q18)

Source: INPUT

The main reasons cited for utilising a single vendor were:

- Relationships
- Easier control and management
- Better communications
- Benefit of one contractual agreement.

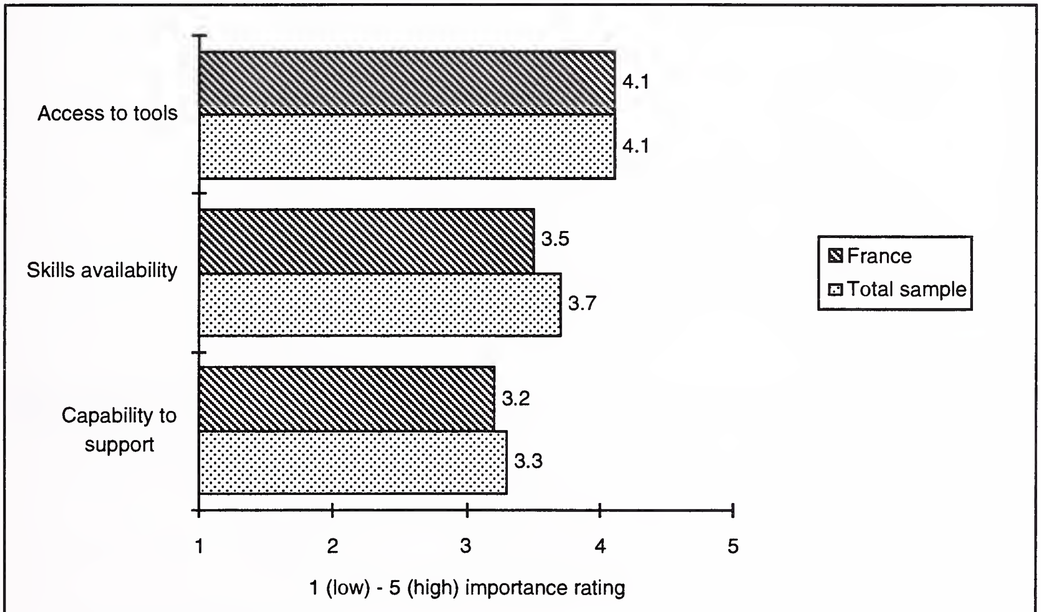
The main reasons cited for using a combination of specialist vendors were:

- Maintains a competitive environment
- Spreads risk
- Can choose best of breed
- Company policy demands it.

Respondents were also specifically questioned about the importance of three factors which were considered to be of key significance in the service vendor selection process. These were skills availability, access to tools and the perceived ability of the vendor to deal with difficulties in technological change and improvement. User responses are recorded in Exhibit IV-49.

Exhibit IV-49

Importance of Vendor Characteristics — France



Sample of 30 respondents: (Ref:Q19) *Source: INPUT*

It can be seen from Exhibit IV-49 that only the *access to tools* factor stands out as being given a really strong rating. Other factors mentioned by users in connection with vendor selection characteristics were:

- Availability of software
- Ability to support the provision of a business solution.

V

The Netherlands

The data from the Netherlands sample is analysed in this chapter.

Section A contains data analysis concerning the LAN/Desktop environment particularly the criticality of the installation to the business operation within which it is located.

Section B examines the subject of LAN/desktop support services and the current allocation of responsibility for their provision.

Section C focuses on the current use of external services vendors for the provision of LAN/Desktop services and the attitudes of respondents towards the use of external vendors for the future provision of these services.

A

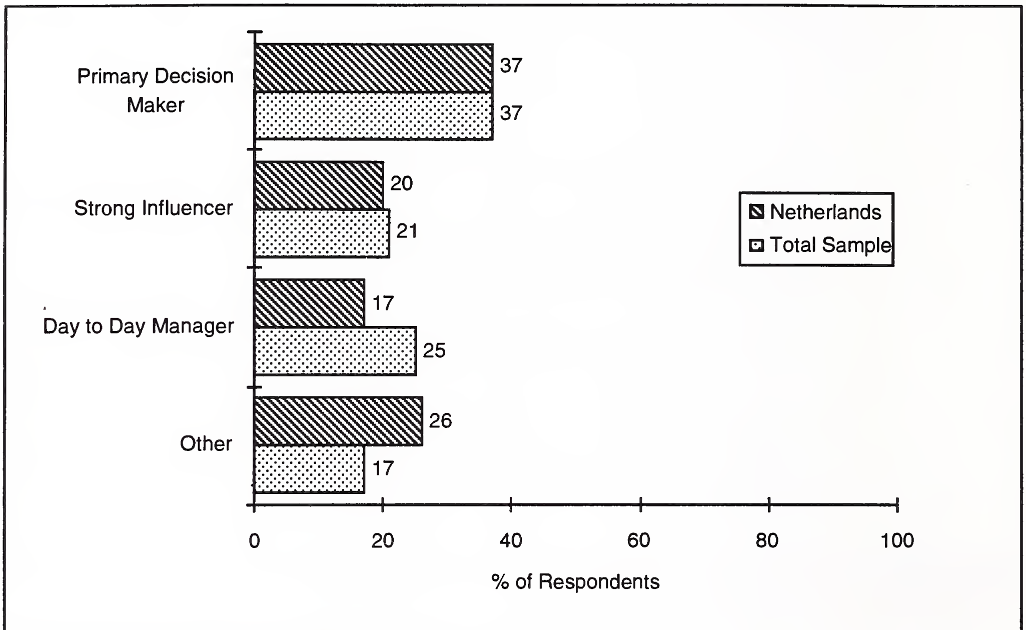
LAN/Desktop Environment

1. Criticality of LAN/Desktop Operations

Exhibit V-1 shows the respondent profile for the Netherlands sample in respect of their involvement with LAN management services.

Exhibit V-1

Respondent Involvement with LAN Management Responsibility—Netherlands



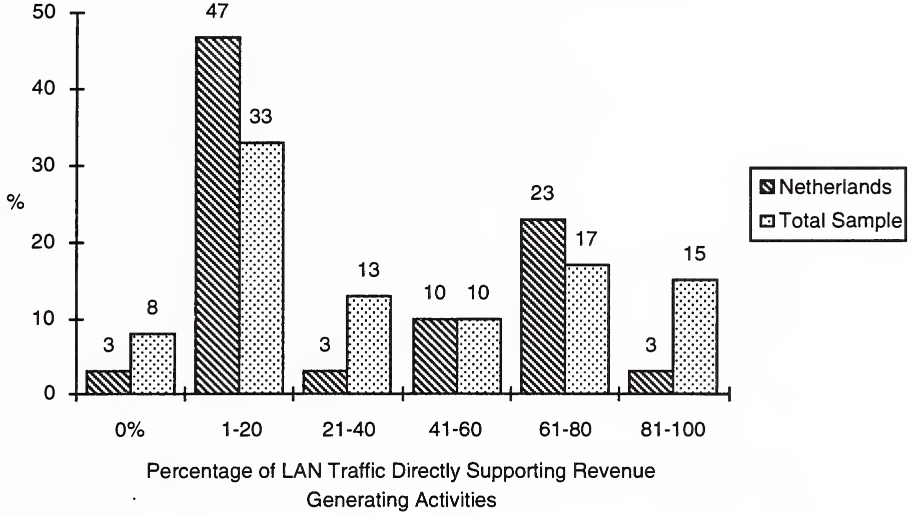
Sample of 30 respondents. (Ref. Q1)

Source: INPUT

Exhibit V-2 shows the distribution of responses regarding the proportion of LAN traffic that is considered to support revenue generating applications. The average rating for the Netherlands is 32%.

Exhibit V-2

LAN Support for Revenue Generating Applications — Netherlands



Sample of 30 respondents. (Ref. Q2a)

Source: INPUT

Exhibit V-3 lists comments made by respondents in respect of the impact of significant network outage on their business operations.

Exhibit V-3

Impact of Significant Network Outage—Netherlands

order entry system would halt

80 users would be down - extremely serious

inconvenience - internal admin. systems would crash

most companies rely on systems - we are no different

loss of admin. functions/revenue implications

internal systems would collapse

loss of control - high financial cost

would affect internal office procedures

loss of remote comms & office functions

very serious

would be bad as we off-load processing routines onto the LAN

NA (installing LAN in next 3-4 mths)

fatal!

internal office admin. systems would fall

business would come to a standstill

all spreadsheet & office functions would go down

all design work done on LAN - a critical operation

would be a disaster

mostly tech applications but serious internal problems

technical services would be inoperable

manufacturing operations would stop (prod control/)

not critical but serious

disaster

LAN used for critical hospital applications - just cannot have major outages

although LAN is small, handles all internal correspondence & documents

complete system would fail

very serious

any serious malfunction would have an impact

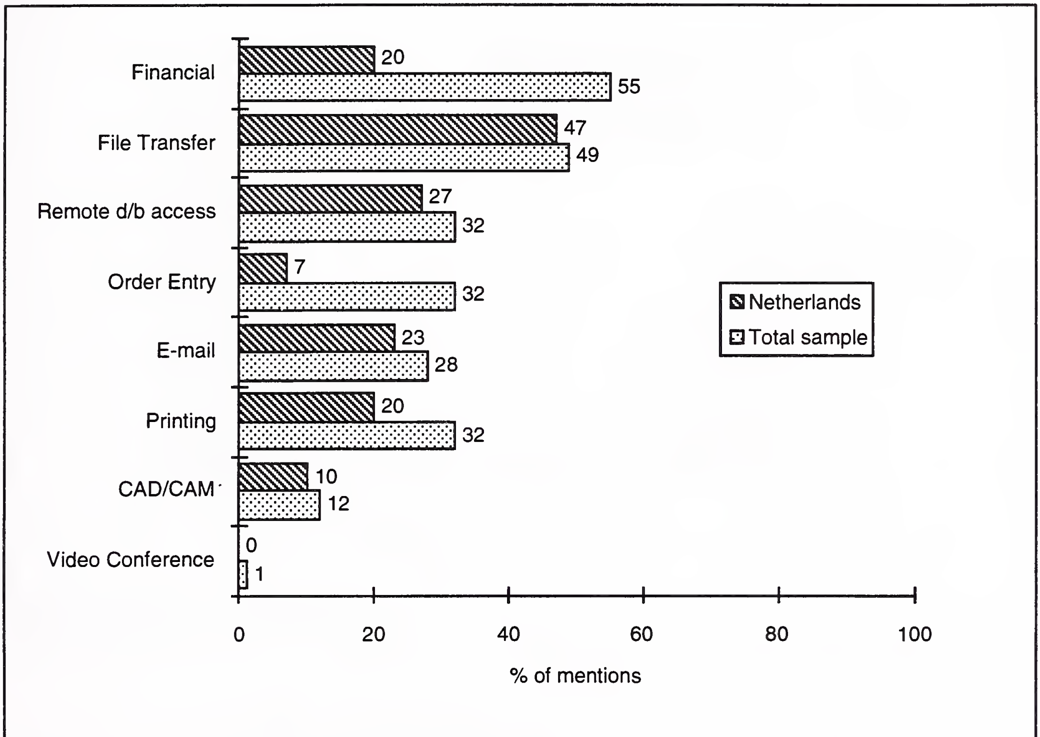
problematic

serious administration problem

Exhibit V-4 shows a profile of the principal applications running on LANs for the Netherlands sample.

Exhibit V-4

Principal LAN Applications—Netherlands

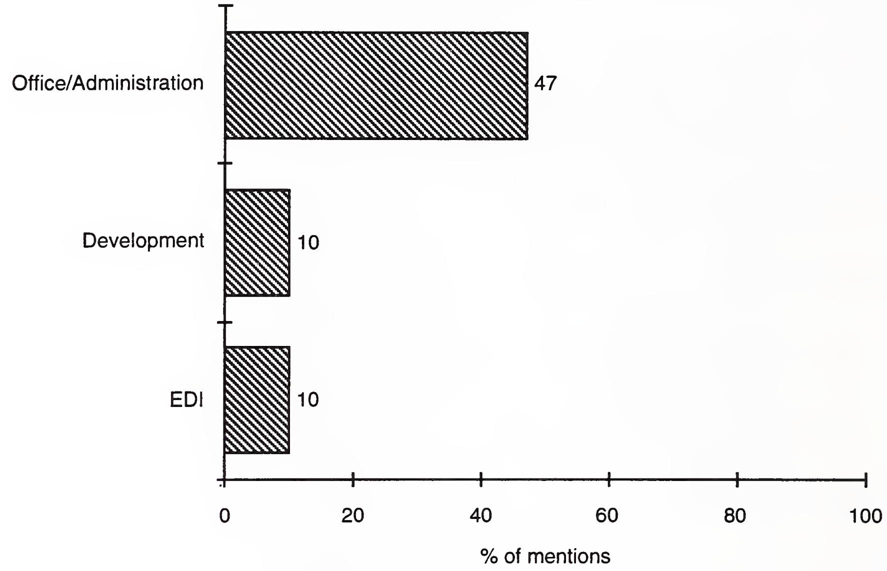


Sample of 30 respondents: multiple answers allowed (Ref:Q3a)

Source: INPUT

Exhibit V-5

Additional LAN Applications

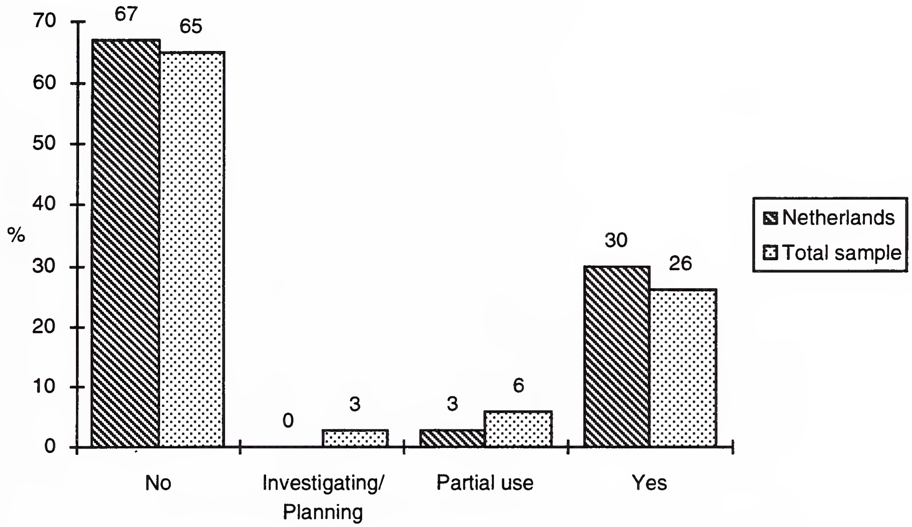


Sample of 30 respondents: multiple answers allowed (Ref:Q3a)

Source: INPUT

Exhibit V-6

Client 'Loss Impact' Measurement — Netherlands



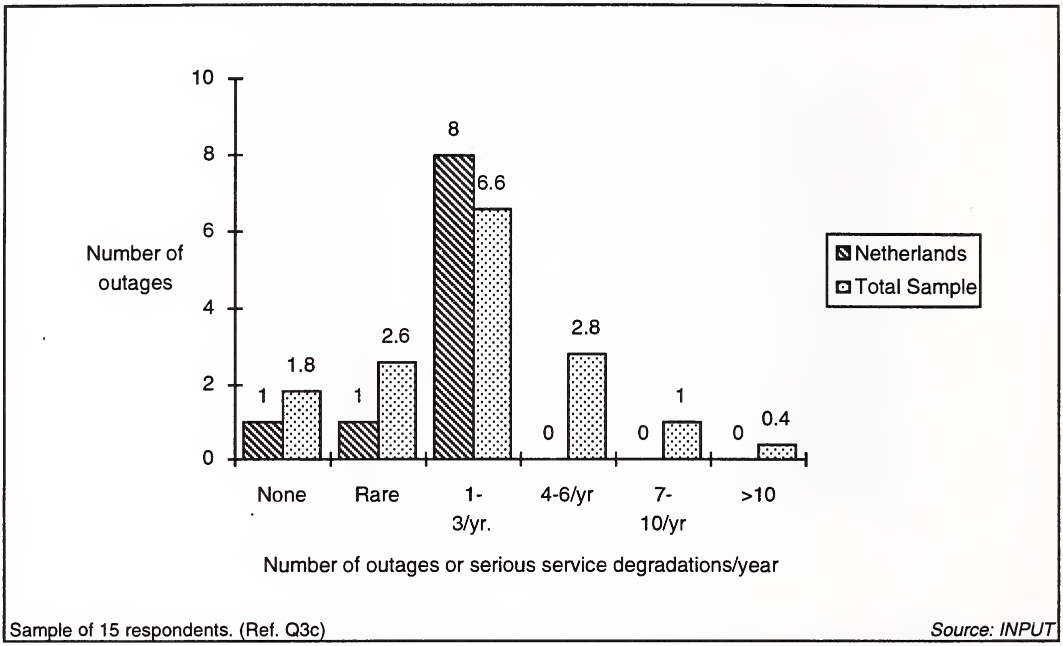
Sample of 30 respondents. (Ref. Q3b)

Source: INPUT

Exhibit V-7 shows the distribution of LAN outages reported. Only respondents who reported an answer are included in these statistics, for the Netherlands sample this amounted to exactly one third of the full sample of 30 interviewees.

Exhibit V-7

Annual LAN Outages — Netherlands

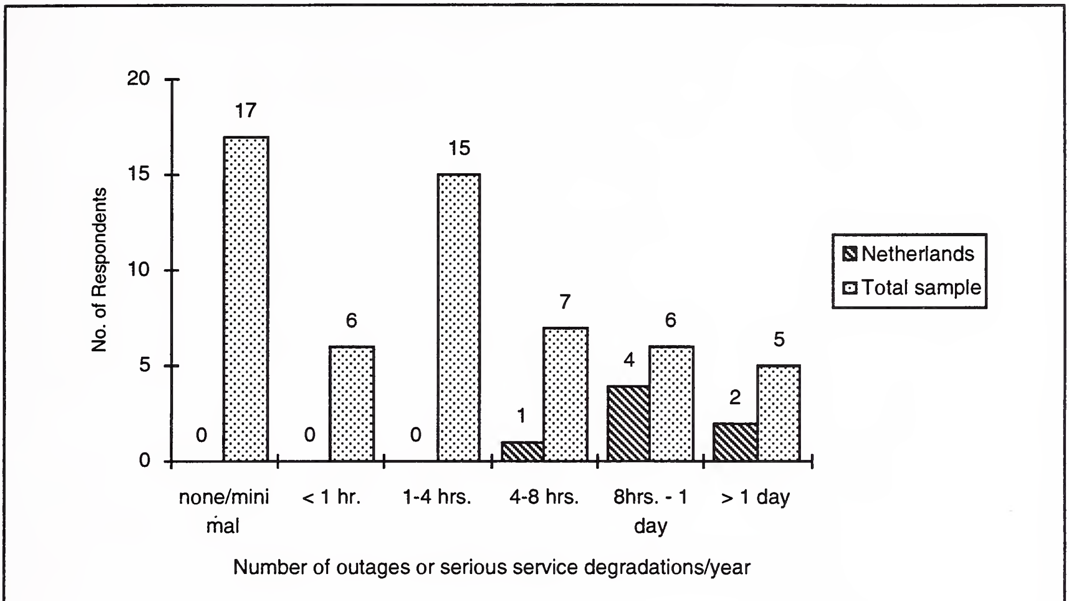


Sample of 15 respondents. (Ref. Q3c) *Source: INPUT*

In respect of the duration of outages few respondents were able to provide a clear response. In total 8 of the 30 Netherlands respondents gave some information which is analysed in Exhibit V-8.

Exhibit V-8

Duration of LAN Outages—Netherlands



Sample of 15 respondents. (Ref. Q3c)

Source: INPUT

The Netherlands sample reported a total of 76 LANs, 77 servers and between 2890 and 4895 client PC/workstations in use in 1994. The average for the sample is shown in Exhibit V-9.

Exhibit V-9

Desktop/LAN Characteristics—Netherlands

Characteristic	Netherlands 1994	Total Sample 1994
Avg. No. of Clients	115	860
Avg. No. of Servers	2	58
Avg. No. of LANs	2.5	60
Server/LAN Ratio	0.8	1
Client/Server Ratio	58/1	15/1

(Q4a)Source INPUT

Multiple Operating Systems are used as is shown in Exhibit V-10. An indication of the variety of use can be obtained from this exhibit which shows the percentage of use of each type of operating system reported for both servers and client workstations. Other operating systems sited were Apple Macintosh, Sun and Apollo.

Table V-10

Client Operating System Usage - Netherlands

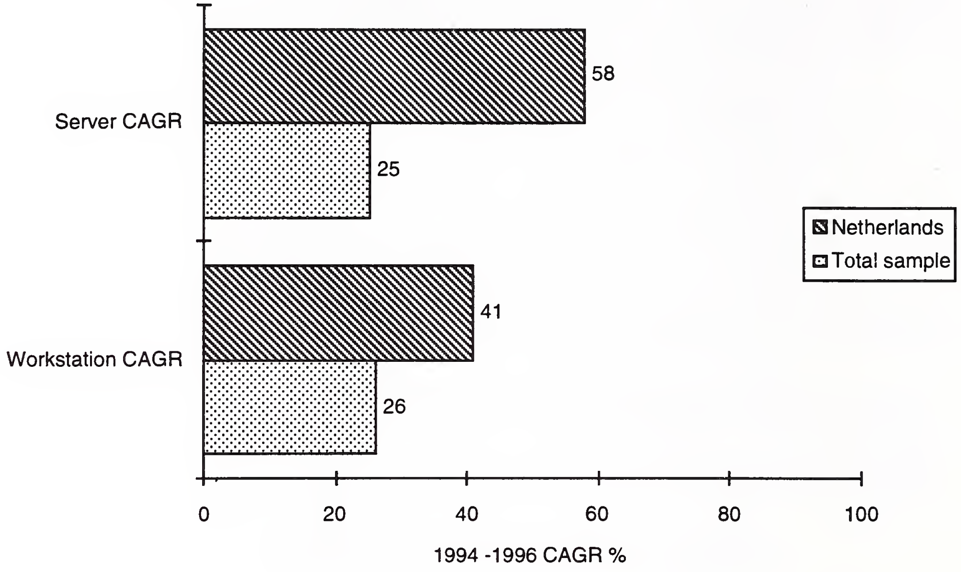
Operating System	% of Servers - Netherlnds	% of Servers - Total Sample	% of PC/Workstations - Netherlnds	% of PC/Workstations - Total Sample
MS-DOS	63	46	93	78
UNIX	17	20	10	31
Windows	33	35	67	64
OS/2	20	16	37	28
Windows NT	0	3	13	10
Other	3	13	10	19

(Q5a)Source INPUT

Exhibit V-11 provides some indication of the expected growth in the LAN environment according to the Netherlands sample.

Exhibit V-11

Server/Workstation Growth Rates



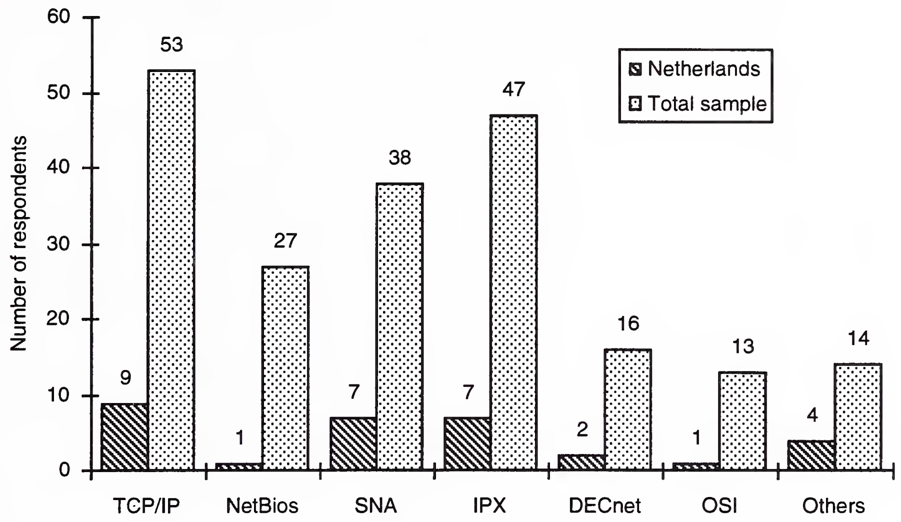
Sample of 30 respondents: multiple answers allowed (Ref:Q4a) *Source: INPUT*

Fifty percent of the Netherlands sample reported using multiple communications protocols at the desktop, the distribution across the different types being shown in Exhibit V- 12.

The extent to which multiple protocols were being used amongst the Netherlands sample is shown graphically in Exhibit V-13.

Exhibit V-12

Usage of Communications Protocols — Netherlands

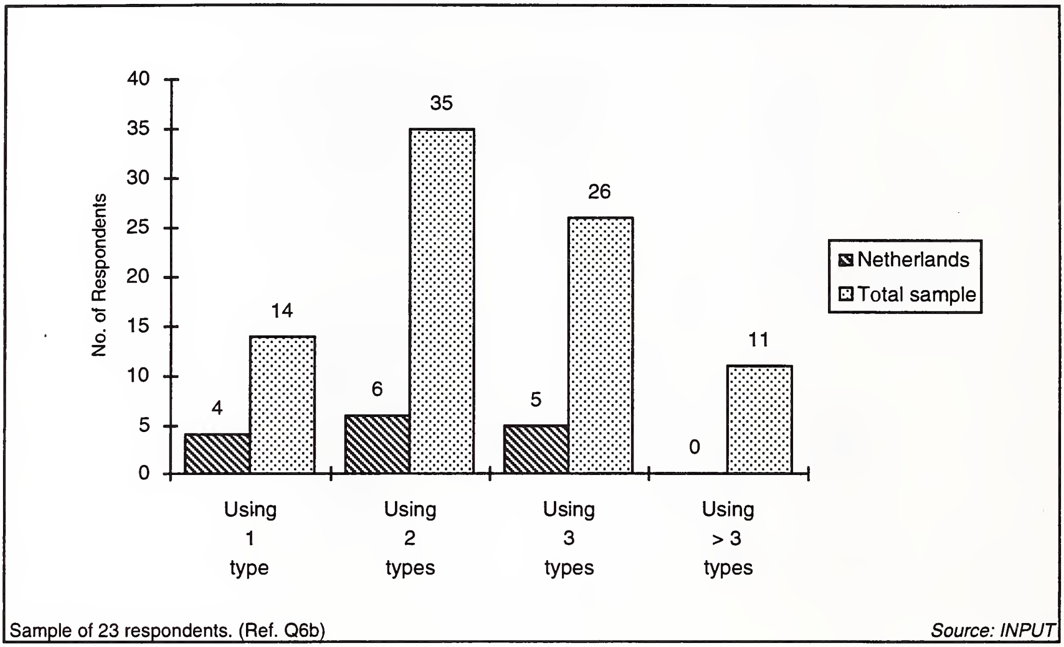


Sample of 30 respondents. (Ref. Q6b)

Source: INPUT

Exhibit V-13

Incidence of Multiple Protocols — Netherlands



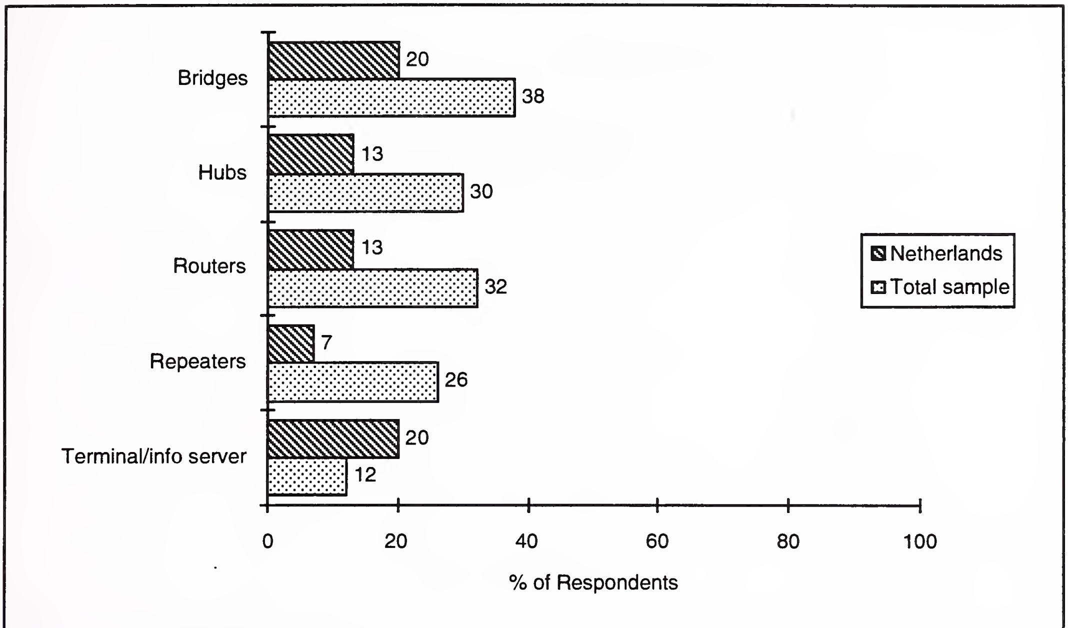
Sample of 23 respondents. (Ref. Q6b)

Source: INPUT

The usage reported of inter-networking devices used is shown in Exhibit V-14 for the Netherlands sample. Other devices mentioned included MUX servers and connectivity devices.

Exhibit V-14

Inter-networking devices used



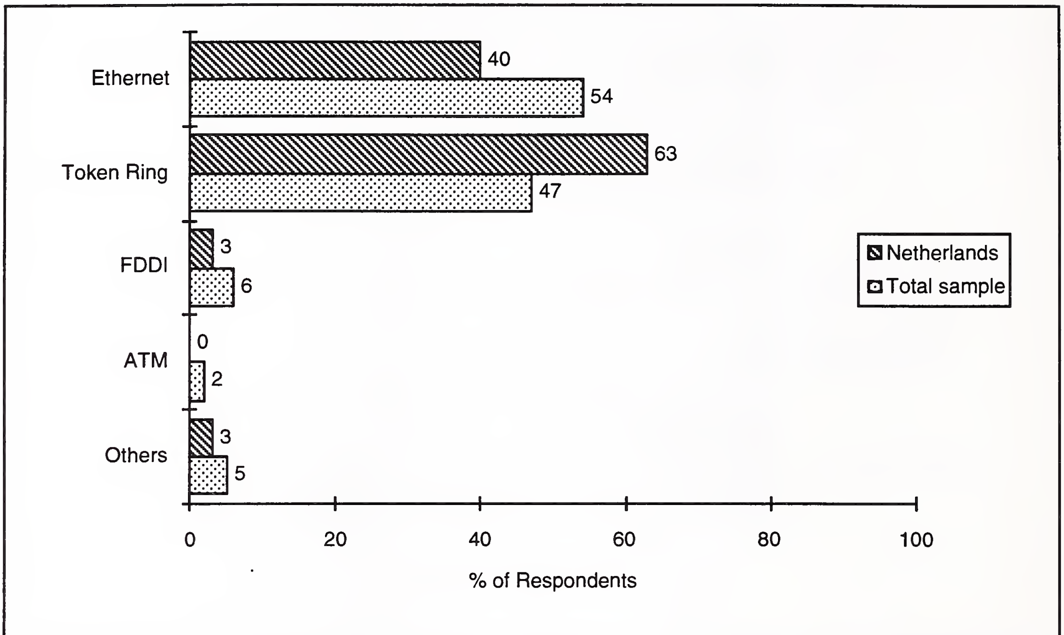
Sample of 30 respondents. (Ref. Q6c)

Source: INPUT

Exhibit V-15 indicates the percentage of the different types of LAN installed in the Netherlands sample. Respondents were also asked to provide an indication of the types of LAN they expected to have installed in two years time. Their responses indicated no significant difference from those given for 1994.

Exhibit V-15

Types of LAN Currently Installed

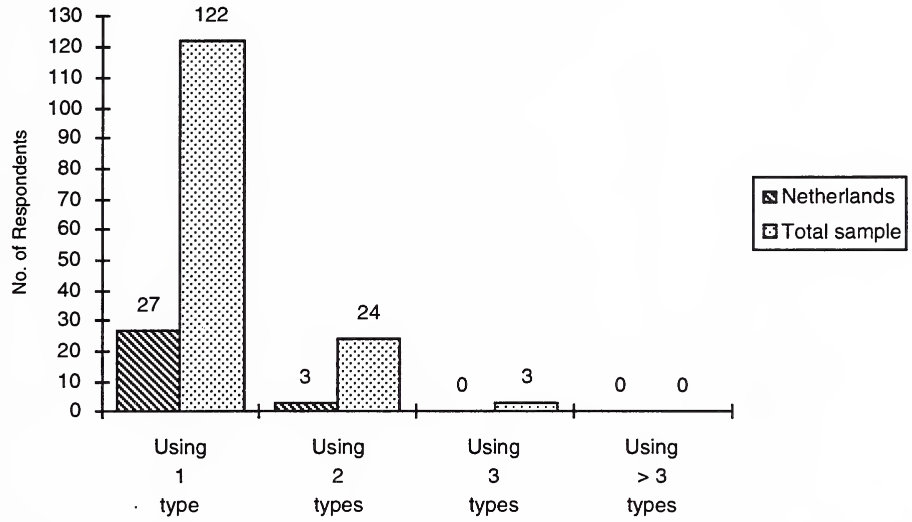


Sample of 30 respondents: multiple answers allowed (Ref:Q4a)

Source: INPUT

Exhibit V-16

Incidence of Multiple LAN Types — Netherlands



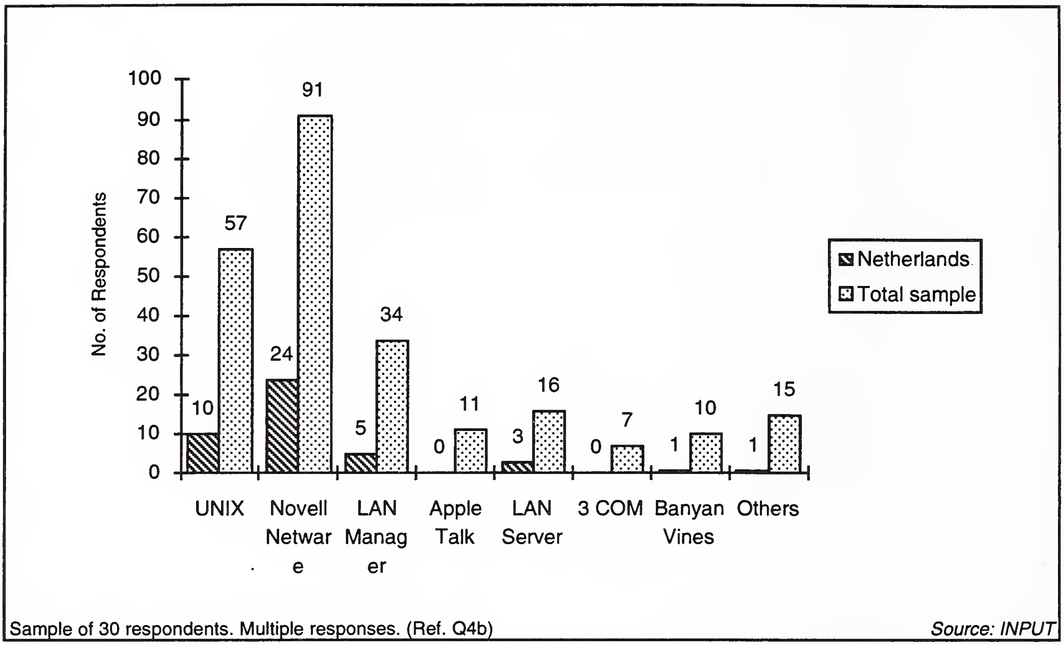
Sample of 28 respondents. (Ref. Q4a)

Source: INPUT

Exhibit V-17 indicates the proportions of different types of network operating systems in use reported by the Netherlands sample. Respondents reported the use of multiple operating systems, the proportions being indicated in Exhibit V-18.

Exhibit V-17

Types of Network Operating System Used —Netherlands

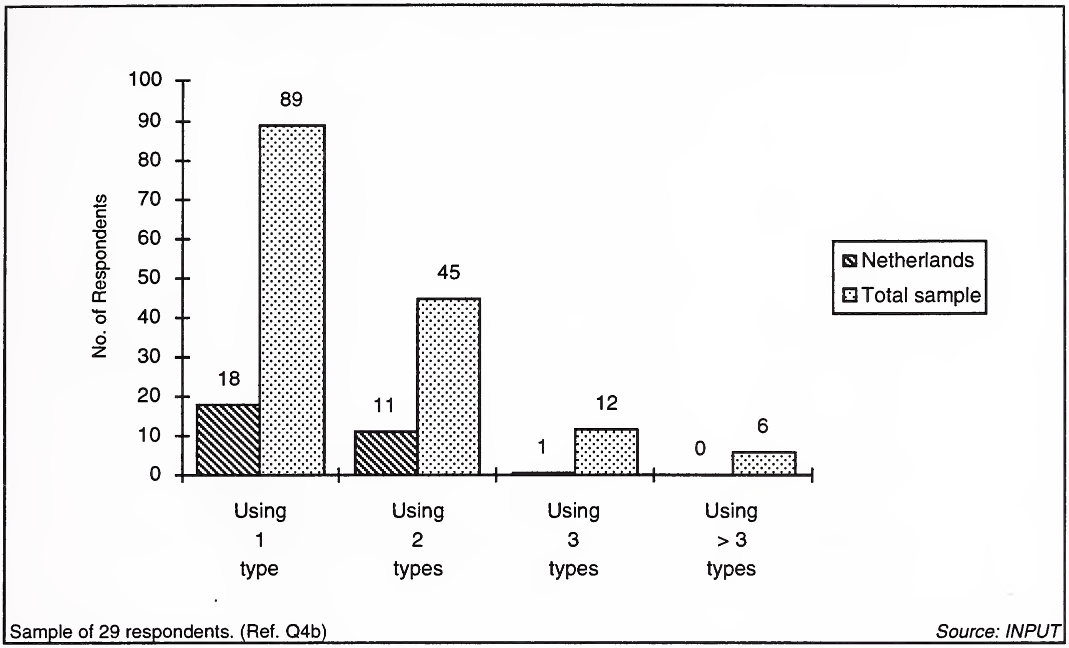


Sample of 30 respondents. Multiple responses. (Ref. Q4b)

Source: INPUT

Exhibit V-18

Incidence of Multiple Network Operating Systems — Netherlands



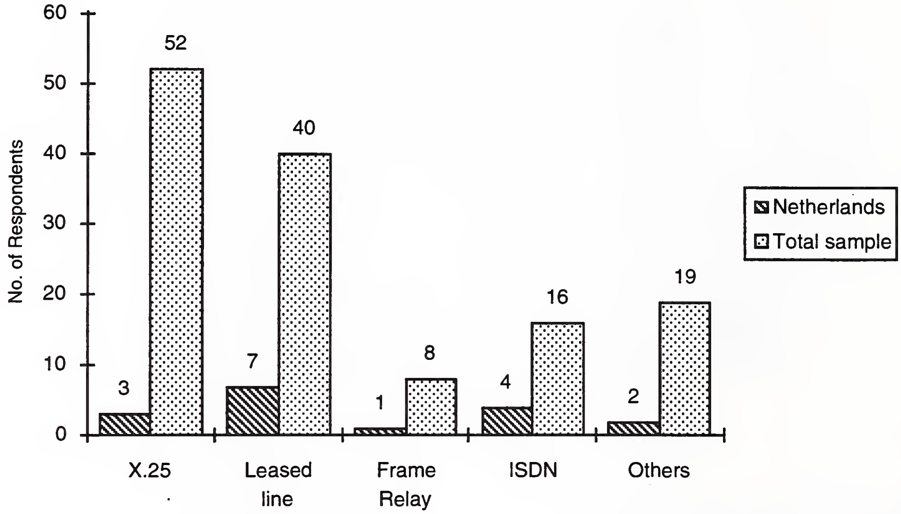
Sample of 29 respondents. (Ref. Q4b)

Source: INPUT

Exhibit V-19 shows the proportions of different types of WAN interfaces in use, clearly some incidence of multiple usage occurs in this area as well. The incidence of multiple use is plotted in Exhibit V-20 below, 15 of the sample of 30 reported only using one type.

Exhibit V-19

Types of WAN Interface Used — Netherlands

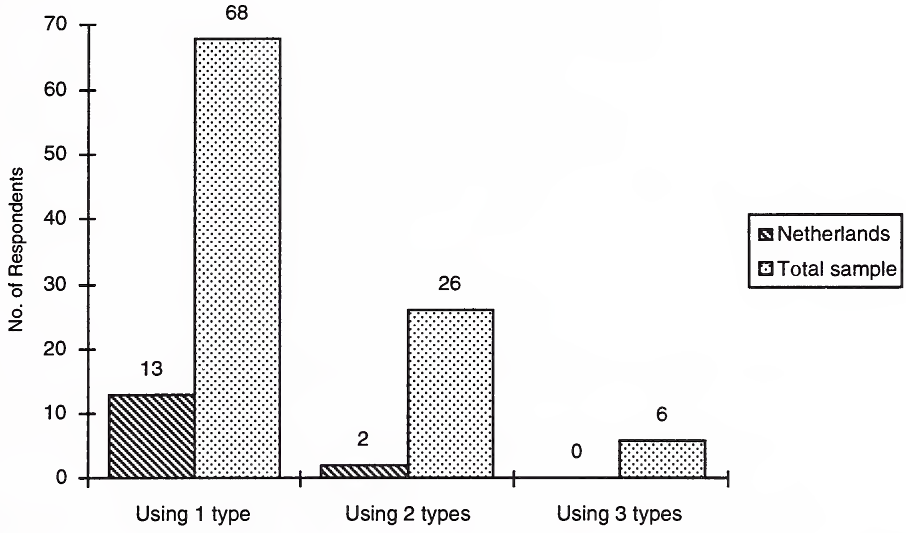


Sample of 30 respondents. Multiple responses. (Ref. Q4c)

Source: INPUT

Exhibit V-20

Incidence of Multiple WAN Interfaces Used — Netherlands



Sample of 23 respondents. (Ref. Q4c)

Source: INPUT

Comments by respondents on the changes envisaged in the LAN operations environment are listed in Exhibit V-21 below. The change profile is shown in Exhibit V-22 for Netherlands and a comparison to the overall sample is provided in Exhibit V-23.

For those few respondents that reported minimal change the reasons cited included:

- Still running mid-range systems
- Pressure from within HQ group to move in certain directions
- Other systems still in operation
- Availability of budget
- LAN used for a specific design purpose only
- CAD department already fully implemented

- LAN has limited function at present
- LAN relatively newly installed
- Not yet a strategic platform.

Few comments were proffered by respondents concerning any other changes expected in the IS (information systems) environment. Most comments related to movement from proprietary systems to open platforms.

see the advantages of PC networks - will definitely increase

slight increase in overall systems use/unable to say whether UNIX or PC-based

Exhibit V-21

User Comments Concerning Changes in the LAN Operations Environment — Netherlands

LAN will grow around 50% p.a. over next 2 years

part of corporate policy towards open systems & LAN integration

keen to expand the LAN operation (but guided by corporate policy)

big increase as more applications are moved onto the LAN

definite improvement and expansion of current LANs

movement of systems towards LAN

DK yet as not yet decided on strategic platform/operating system

LAN only a v. small part of overall IT structure

rapid expansion required

LAN relatively small - no big changes envisaged

not yet known

rapid growth

changes will be determined by the expenditure available

LAN system will definitely increase/it is now our development platform

none

not many

none - used for technical CAD dept only

unlikely to be significant growth

will take on greater uses in the future

depends if LAN is extended outside the office admin. functions

adopted policy of open systems incl. PC LANs/would expect definite increase in LAN traffic

development in VisualBasic means that a PC platform is preferred

almost totally LAN-based

new projects coming on board which will be LAN-based

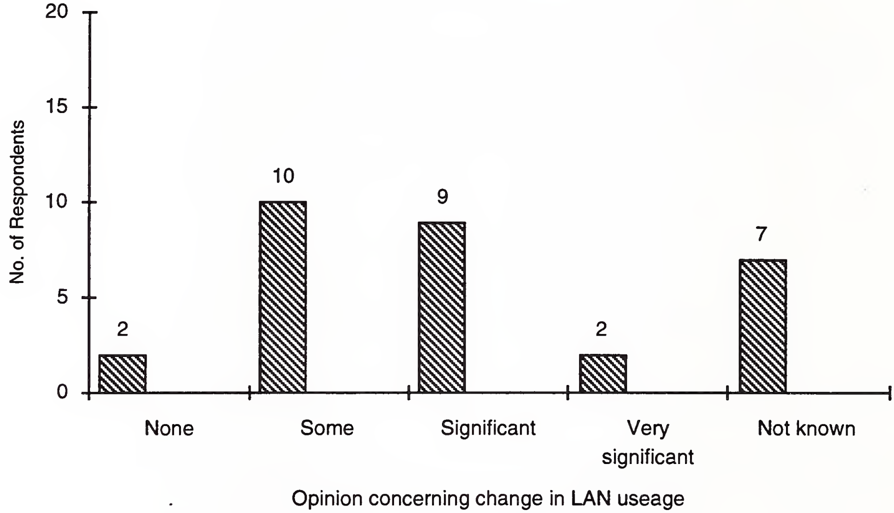
will add a few extra PC's

LAN could develop, depending on whether our mid-range systems are connected

large increase

Exhibit V-22

Expected LAN Change Profile — Netherlands

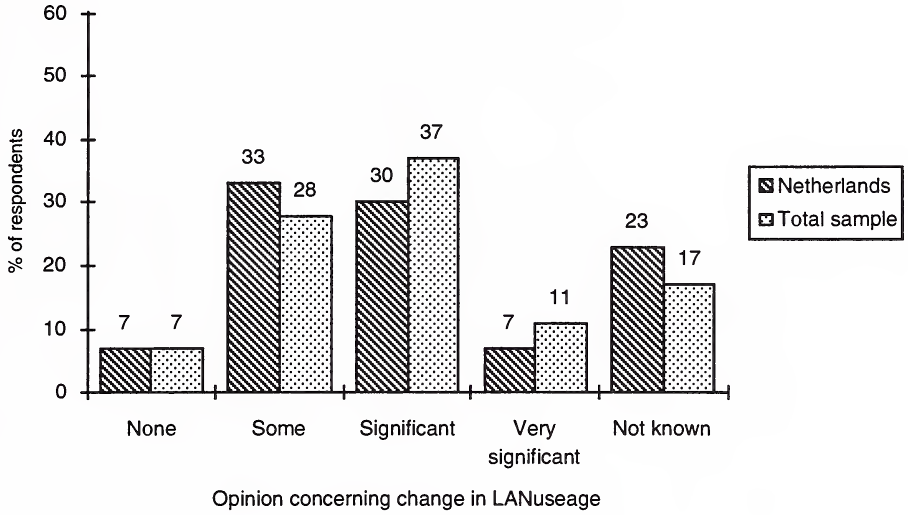


Sample of 30 respondents. (Ref. Q7a)

Source: INPUT

Exhibit V-23

Comparative LAN Change Profile — Netherlands



Sample of 15 respondents. (Ref. Q7a)

Source: INPUT

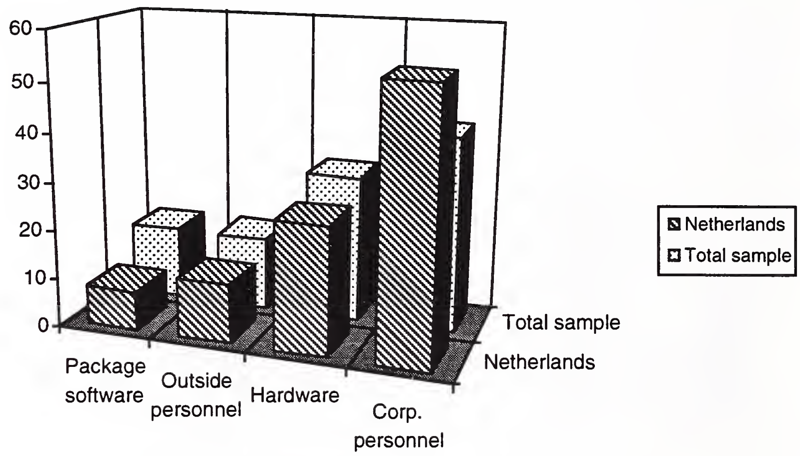
Respondents provided data on the principal constituents of their LAN expenditure currently and this is shown in Exhibit V-24. Respondents were unable to give any meaningful information concerning the likely growth trends for the different aspects of expenditure on LANs.

In total the Netherlands sample represented expenditure on LANs of 6.4 Million Guilders or $3.7 million. This represents an average annual LAN expenditure of approximately $165k per organisation.

Respondents were also asked to express an opinion concerning the adequacy of their current LAN budget. Their responses are analysed in Exhibit V-25. The average rating for the Netherlands sample was 3.1 , indicating that there exists significant levels of dissatisfaction with the budget levels set for this activity.

Exhibit V-24

Expenditure on LAN Systems

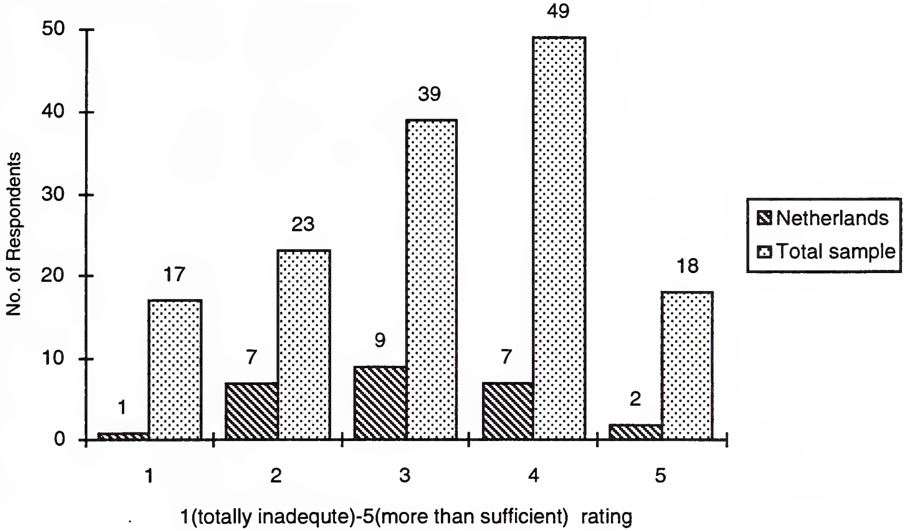


Sample of 30 respondents: multiple answers allowed (Ref:Q4a)

Source: INPUT

Exhibit V-25

Adequacy of LAN Budget—Netherlands



Sample of 29 respondents. (Ref. Q8b)

Source: INPUT

Exhibit V-26

Role of the user department & changes foreseen —Netherlands (q9)

we support as much as possible in-house

attempt to support as much of the system as we can

all in-house, other than software upgrades/server maintenance

small role but will increase

most depts LAN/PC-literate & can support large no of applications

have extended our expertise in last 2 years

each dept will provide support level to each of the user groups

daily housekeeping routines

none at present - no change

no user organisations as such

each dept (server) responsible for own housekeeping/fault-reporting

as new (1994) system, users will no play any support role yet

each workgroup has own responsibilities for daily routines

software upgrades/departmental operations/admin. support

each business unit has own support & IT budget

none at present - no change

no major user support - no change envisaged

none - play role of operators/no IT expertise - no change

simple fault-reporting - no change

reasonably self-sufficient/systems admin. etc. - no change

none - they are production staff - no change

basic housekeeping duties - no change

each operating dept has a level of self-support

no - there is a specific dept for support

none for WP / self-supportive on development side

systems admin. duties

general housekeeping & systems admin.

each dept has an operational responsibility - could change with large LAN growth

Exhibit V-26.1

Role of the IS department & changes foreseen - Netherlands (q10)

as much as possible in-house

only one IS dept for whole company

will take on more & more of support role (PC learning curve fast)

IS dept is more network-oriented/role will increase significantly over next 2 yrs

IS concerned with introducing standards/maintaining consistency throughout group

IS still tend to spend most of time on mid-range system

overall policy/moving a greater no. of applications to the LANs

first line of contact for all users

getting greater confidence with networks/IS role will undoubtedly increase

IS have taken major support role which will continue

more concerned with strategy/software development - try to minimise role in daily operations

very dependent on vendor over next 2 years

IS dept still more concerned with AS/400's

strategic decision/choice of S/W utilities & development tool/provision of system support

very minor day-to-day role/rely on local PC dealers

LAN seen as secondary/less significant. because does not Support main applications (wrongly)

IS are central support function

all front-line support & vendor co-ordination - no change

not much technical support - liaises with vendor - no change anticipated

provides whatever technical assistance required (or resource it)

provide overall support function for all IT systems all LAN support provided by in-house IS - DK if ill change

resolution of technical problems/software upgrades/supply of PTF's

no - there is a specific dept for LAN support

integration/data exchange issues/strategic direction etc.

overall responsibility/technical support & assistance

all supporting services provided by IS

technical & netware issues (in liaison with local supplier)

IS dept divided into several supporting elements - LAN support under one of these

overall technical support - could change with large LAN growth

B

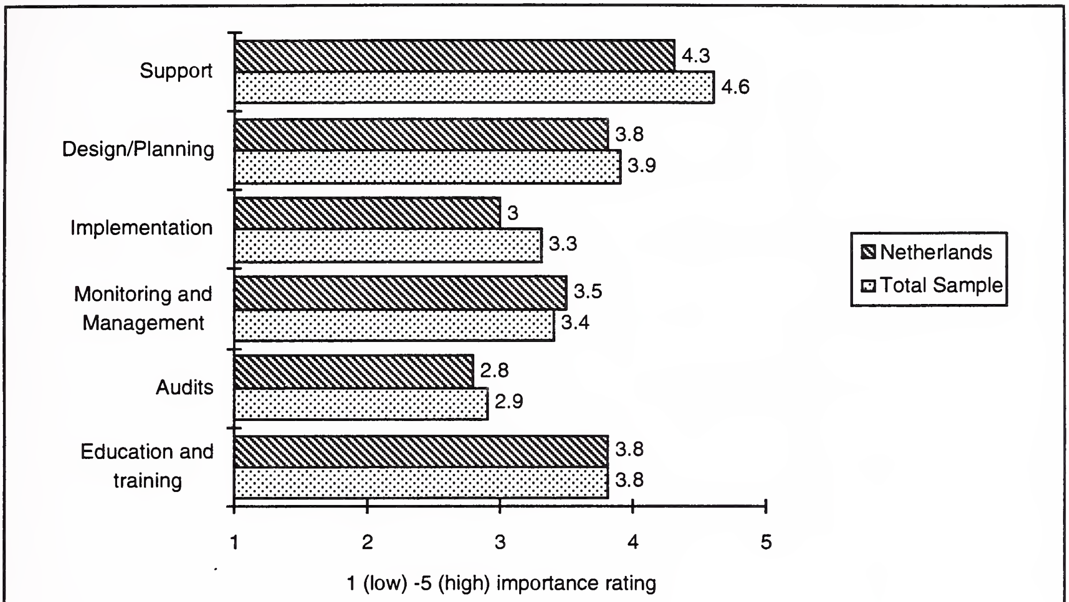
LAN Support Services

1. Key LAN Services

Exhibit V-27 shows the importance ratings for the various LAN related services that can be provided to the user' site for the Netherlands sample.

Exhibit V-27

Importance of LAN Support Services



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

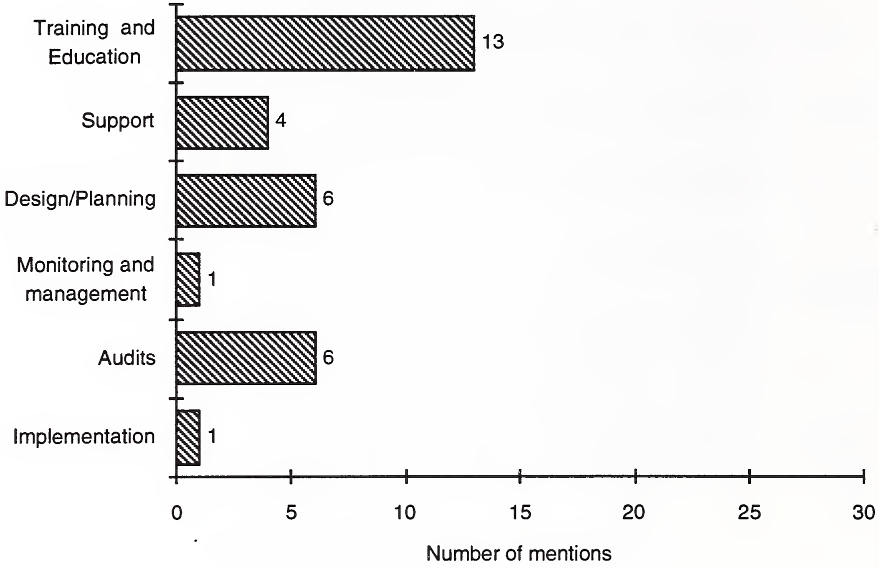
2. Responsibility Profiles

Exhibit V-28 shows the profile for the various LAN related services that respondents reported were the responsibility of the workgroup. Exhibit V-29 provides a comparison of the Netherlands profile with that for the total sample in percentage terms.

Exhibit V-30 and 31, and Exhibits V-32 and 33 show respectively those for the IS group and for independent third-party vendors.

Exhibit V-28

Workgroup Responsibility Profile - Netherlands

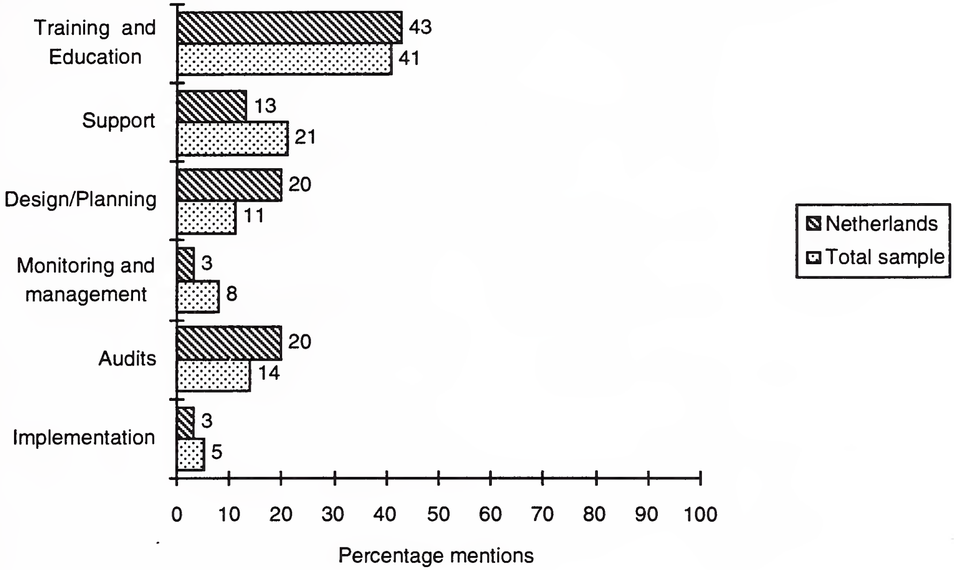


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit V-29

Workgroup Responsibility Profile Comparison- Netherlands

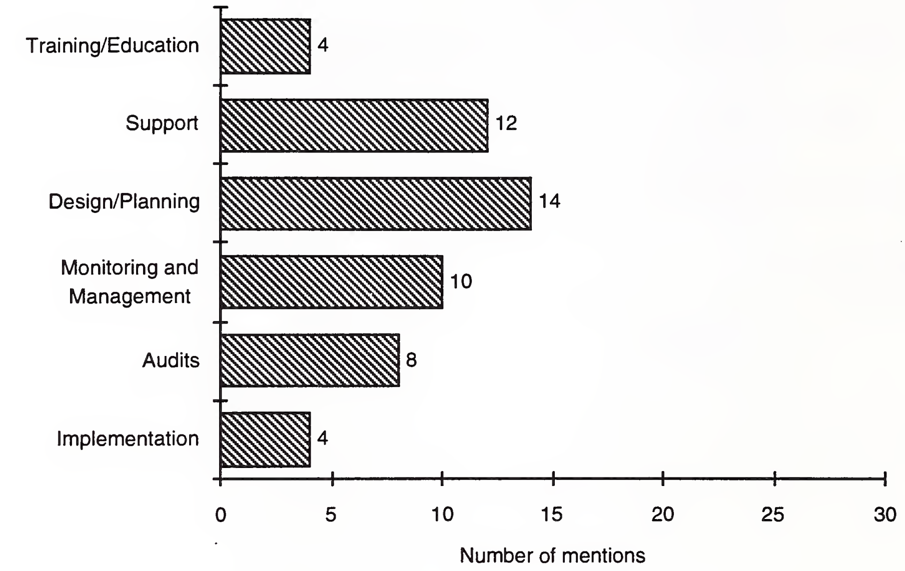


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit V-30

IS Responsibility Profile - Netherlands

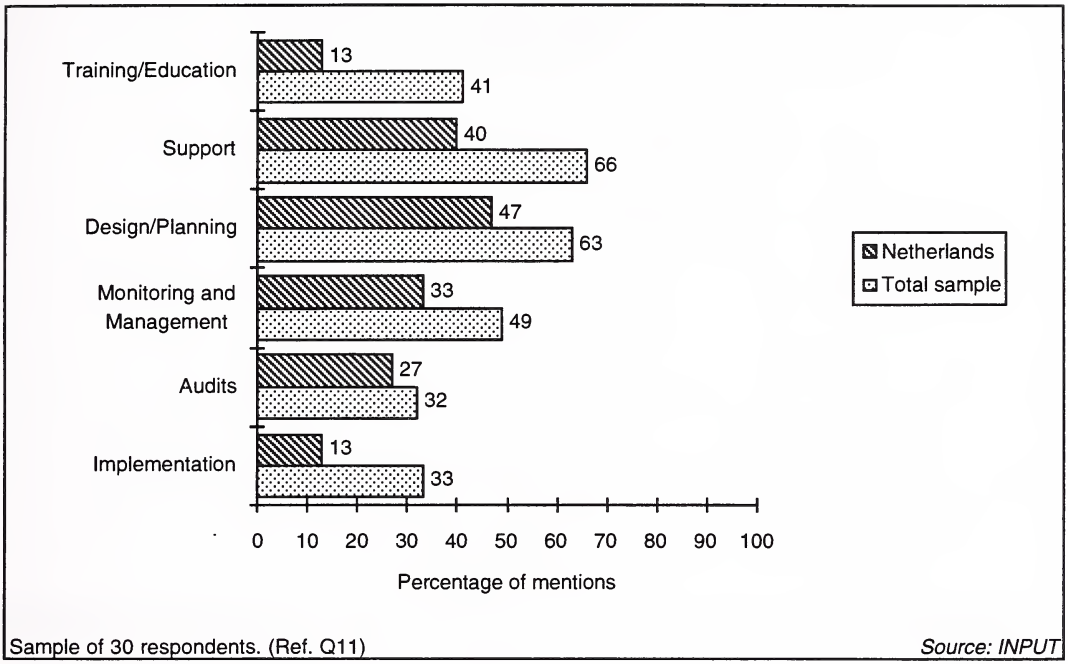


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit V-31

IS Responsibility Comparative Profile - Netherlands

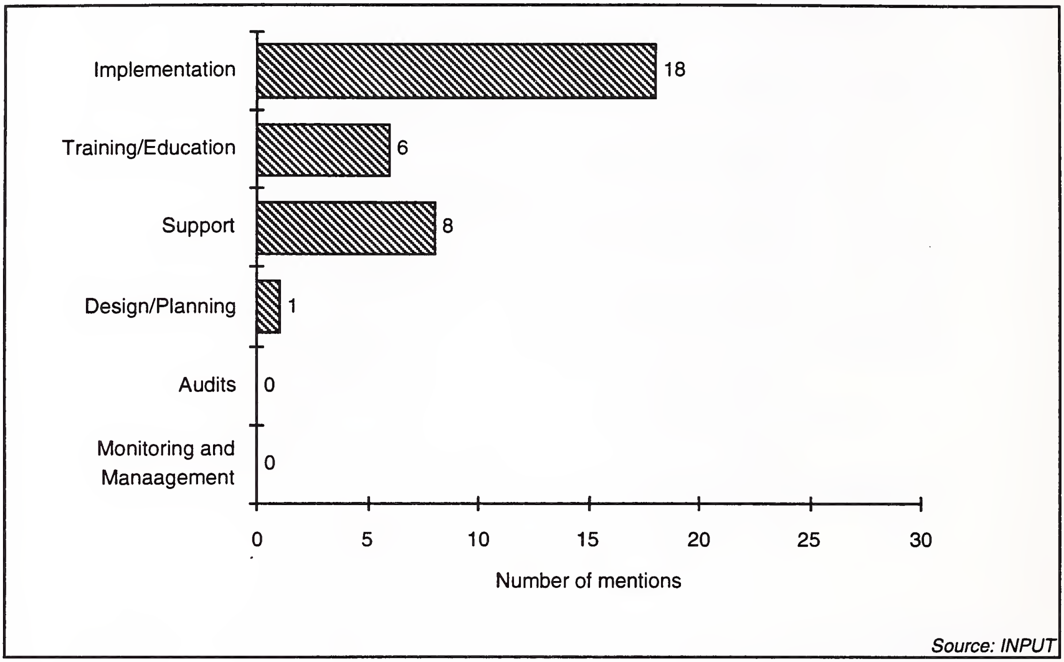


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit V-32

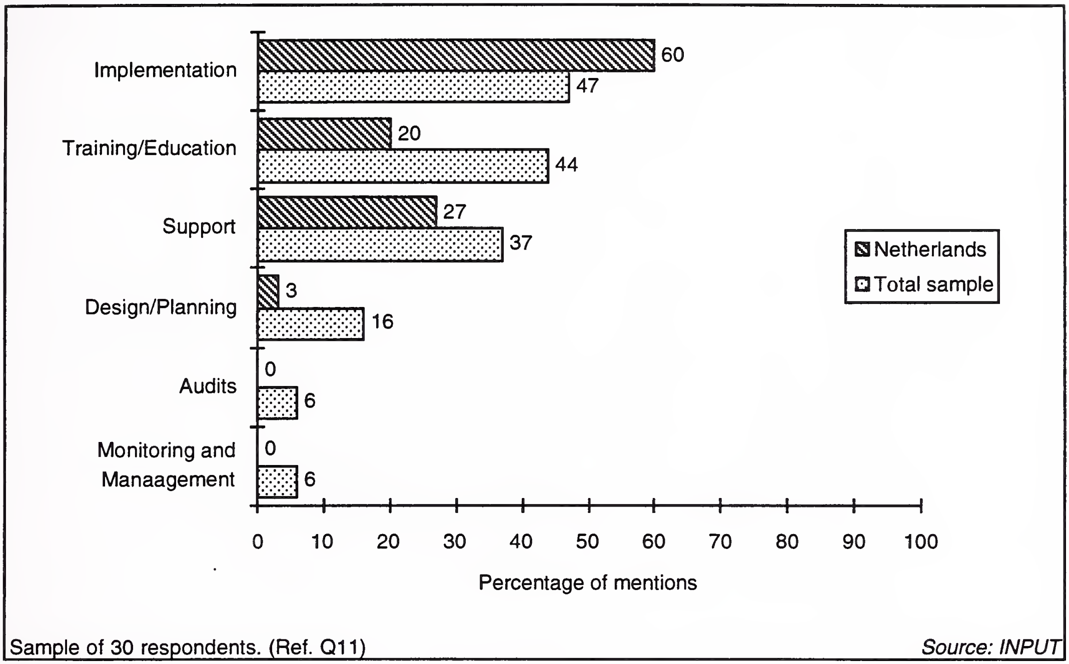
External Vendor Responsibility Profile - Netherlands



Source: INPUT

Exhibit V-33

External Vendor Responsibility Profile - Netherlands



Sample of 30 respondents. (Ref. Q11) *Source: INPUT*

3. LAN Service Areas

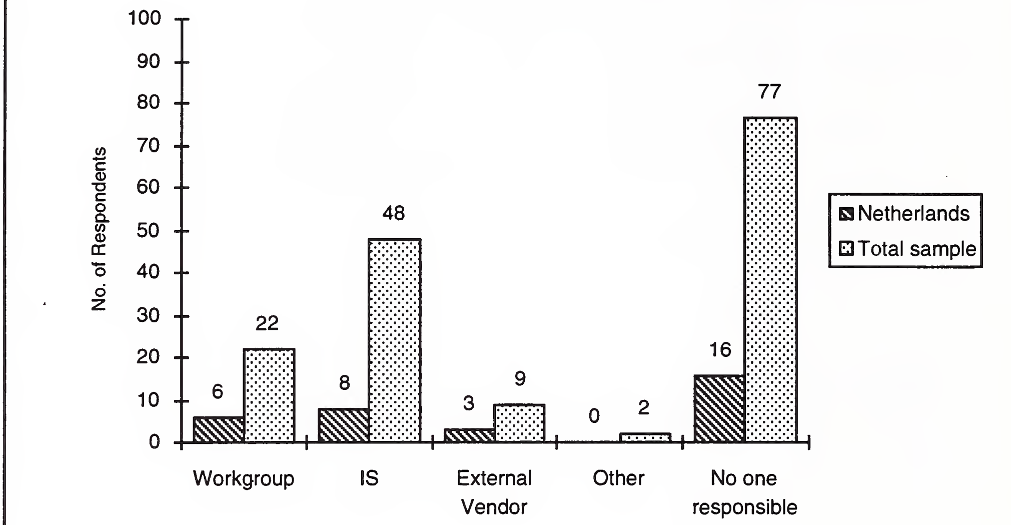
a. Audits

The overall importance rating for this activity was low for the Netherlands sample at 2.8.

Exhibit V-34 shows the responsibility profile for the LAN/desktop audit function.

Exhibit V-34

LAN/Desktop Audit Function Responsibility Profile — Netherlands



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

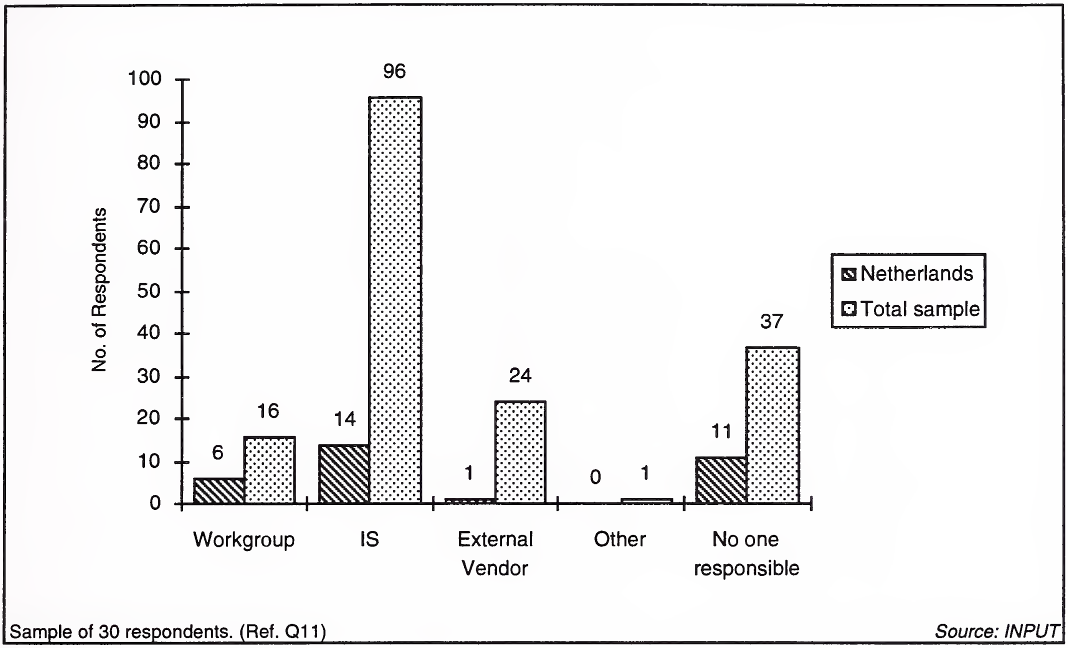
b. Design and Planning

The overall importance rating for this area was relatively strong at 3.8.

Exhibit V-35 shows the responsibility profile for the LAN/desktop design and planning function.

Exhibit V-35

LAN/Desktop Design and Planning Function Responsibility Profile — Netherlands



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

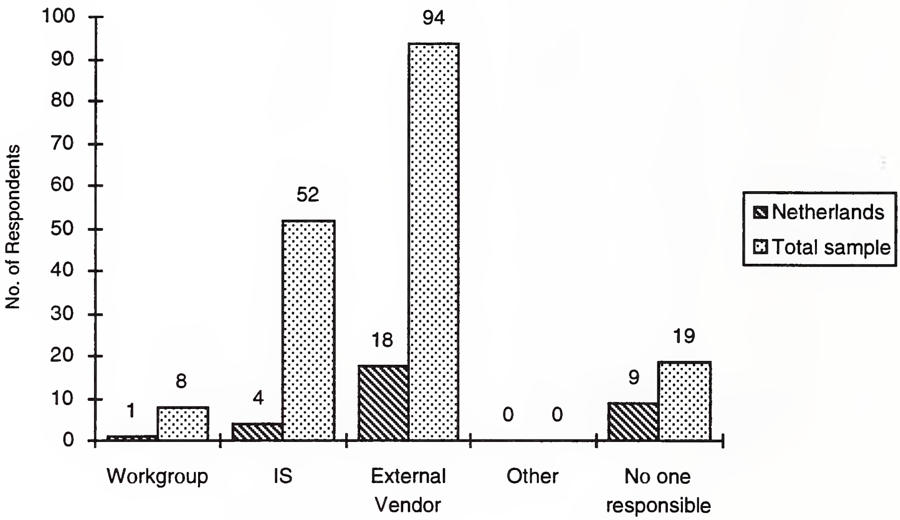
c. Implementation

The overall importance rating for this area was 3.0.

Exhibit V-36 shows the responsibility profile for the LAN/desktop implementation function.

Exhibit V-36

LAN/Desktop Implementation Function Responsibility Profile — Netherlands



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

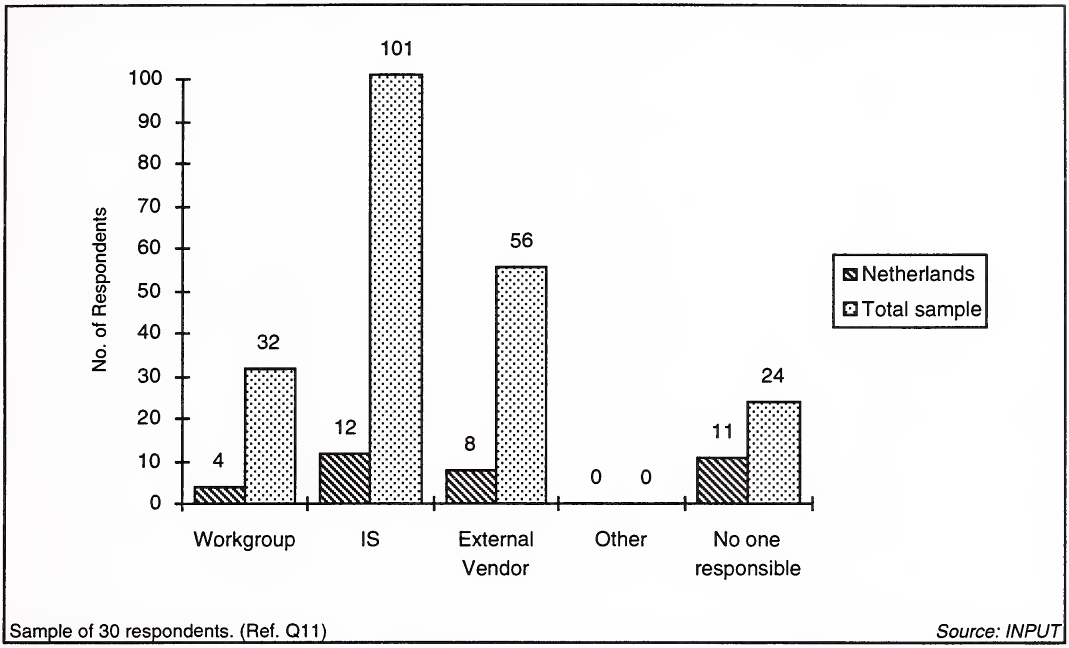
c. Support

The overall importance rating for this area was 4.3 for the users who gave a response on this question.

Exhibit V-37 shows the responsibility profile for the LAN/desktop support function.

Exhibit V-37

LAN/Desktop Support Function Responsibility Profile — Netherlands



Sample of 30 respondents. (Ref. Q11)

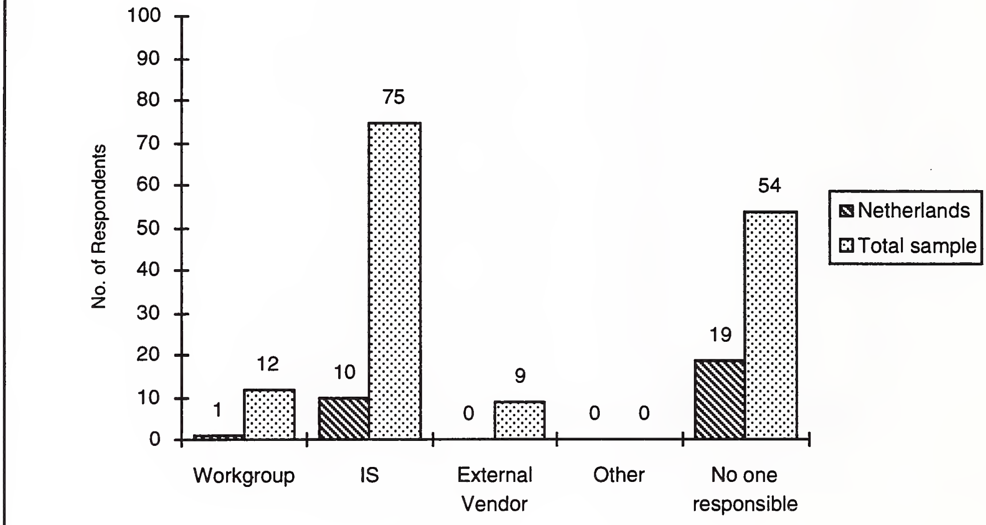
Source: INPUT

d. Monitoring and Management.
The overall importance rating for this area was a relatively strong 3.5.

Exhibit V-38 shows the responsibility profile for the LAN/desktop monitoring and management function.

Exhibit V-38

LAN/Desktop Monitoring and Management Function Responsibility Profile — Netherlands



Sample of 30 respondents. (Ref. Q11) *Source: INPUT*

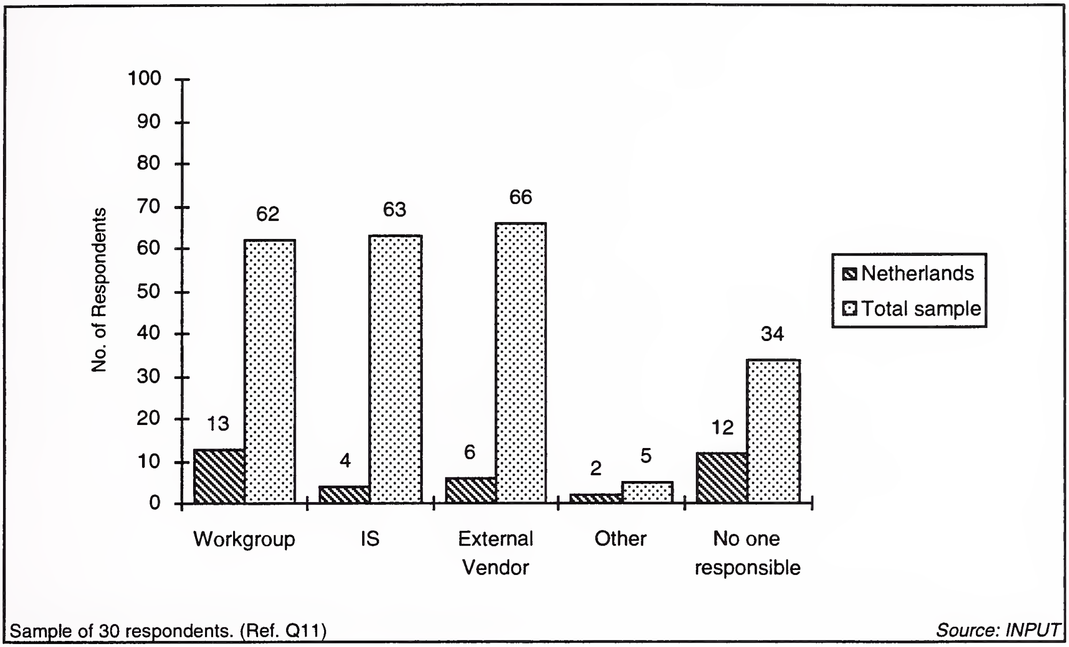
.e *Training and Education*

The overall importance rating for this area was a relatively strong 3.8.

Exhibit V-39 shows the responsibility profile for the LAN/desktop education and training function.

Exhibit V-39

LAN/Desktop Training and Education Function Responsibility Profile — Netherlands



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

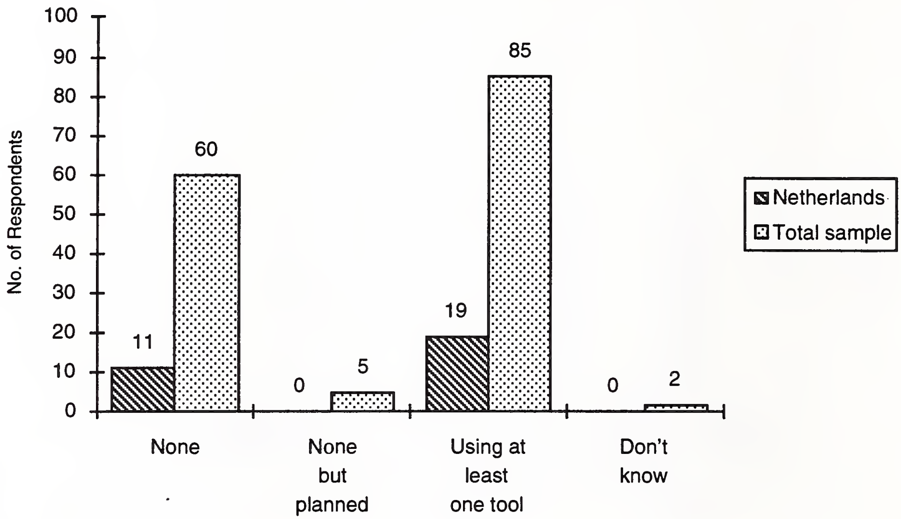
f. Methodologies and Tools

In connection with the monitoring and management function for the LAN respondents were also asked to state what management methodologies or tools they were using for automating any of the functions reported on in sub-sections *a.* through *e.* above.

The extent to which they were using tools or methodologies at all is shown in Exhibit V-40 below.

Exhibit V-40

LAN/Desktop Methodologies and Tools Usage — Netherlands



Sample of 30 respondents. (Ref. Q12)

Source: INPUT

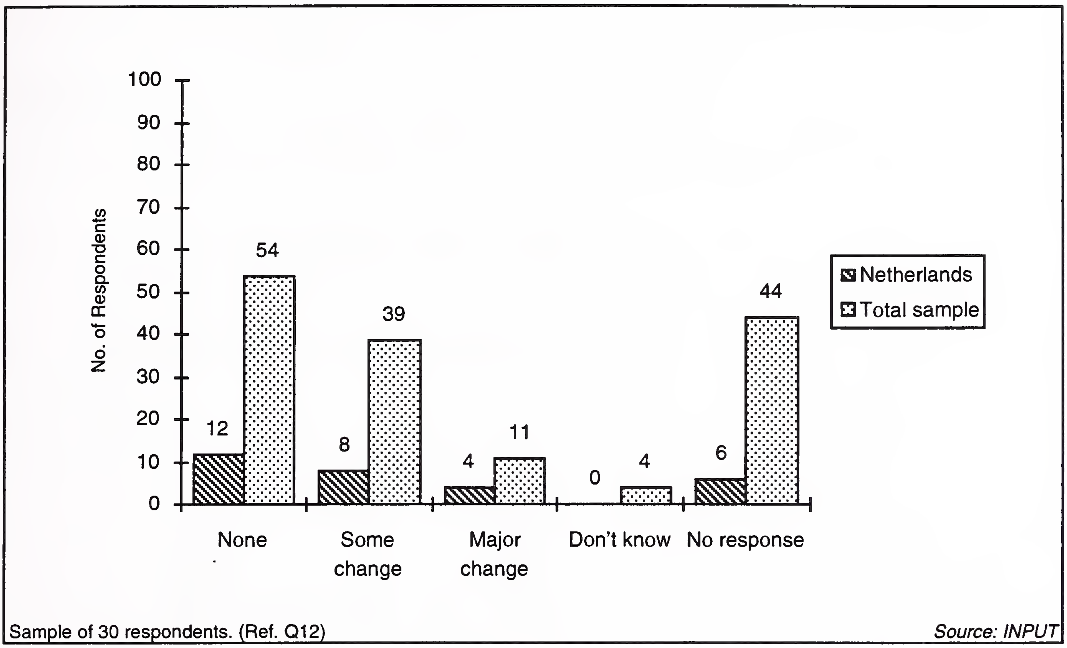
The most commonly mentioned tools in use with two mentions each were Super Project, Symantec, QA and Org/Org Plus. Also mentioned were Quattro Pro, Timeline, Timelink, Lotus Organiser as well as the use of project management techniques and critical path analysis.

g. Anticipation of Change in LAN/Desktop Environment

The overall picture obtained from the Netherlands sample was one where little significant change was expected in the LAN environment in the foreseeable future, i.e. over the next two years. Exhibit V-41 shows the histogram of responses in respect of anticipated change.

Exhibit V-41

Anticipated Change LAN/Desktop—Netherlands



Sample of 30 respondents. (Ref. Q12)

Source: INPUT

Some insights into the reasons for change, or lack of anticipated change, in the LAN/Desktop support environment are provided by the user comments listed in Exhibit V-42 below.

Exhibit V-42

Reasons for Lack of Change in the LAN/Desktop—Netherlands

reasonably self-sufficient, except for hardware maintenance & disaster recovery

at critical mass stage/any growth will be slower as have already heavily invested in IT

cannot see beyond 1996

don't know what role an external vendor would play unable to say (corporate policy decision)

will depend largely on future use (or otherwise) of traditional proprietary systems

need to identify clearly our present & future LAN requirements

as a small company, changes will be relative to size

possibly Asset Management/Performance could be outsourced, depending on increase in PC's

as new system in 1994, significant changes in next 2 yrs unlikely

as no. & complexity of LANs increase, so does need for better control

expect changes but depends on migration of mainstream applications to LAN

LAN use relatively small

LAN used for specific CAD purpose - requirement will not increase

existing LAN v. small part of IT structure/not strategic

support structure is very stable & dependable

LAN currently used for office type operations - this will increase

would depend on how rapidly LANs grow & level of functionality required

current support structure meets current needs/public sector does not make dramatic changes!

only 25 of CO's 250 PC's on LAN - a huge waste - would like to see everything on network

Support infrastructure stable/changes will be determined by change of policy to contract out or lack of int. resources

changes may not improve the support - what do you suggest?

PC network v. small/not present many support issues - change would depend on how quickly it expands

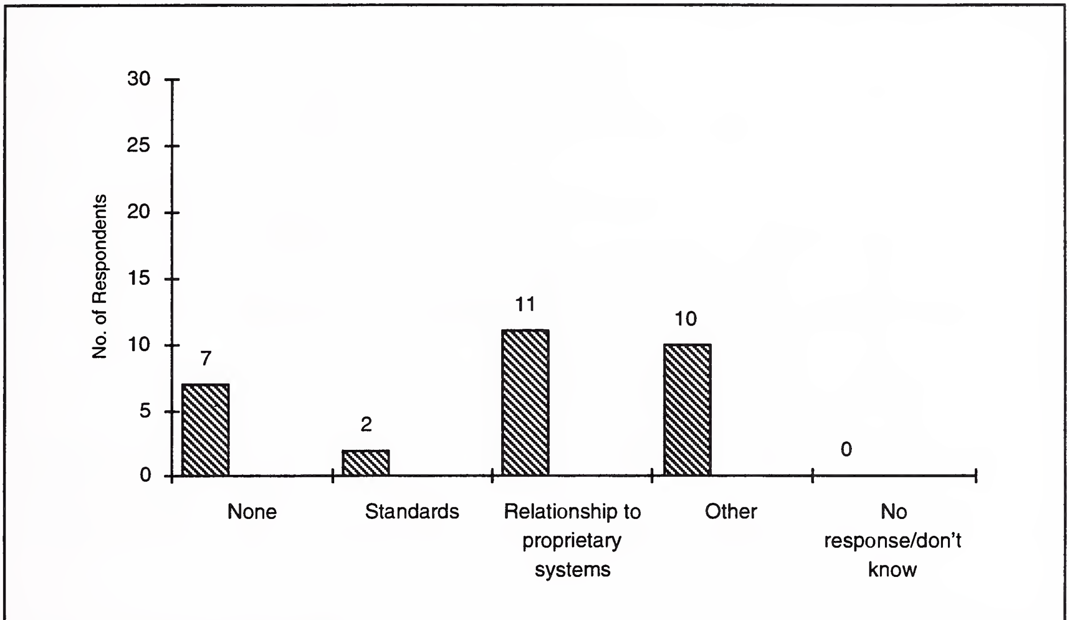
run several IBM systems - if moved to the LAN it would result in considerable change

20 LANs would require a different level of support/operational management

Respondents were also asked to comment on the potential barriers they perceived to the more successful use of LAN technology, Exhibit V-43 shows an analysis of their responses.

Exhibit V-43

Barriers to Using LAN/Desktop Technology — Netherlands



Sample of 30 respondents. (Ref. Q14a)

Source: INPUT

The other category included the following responses:

- Writing off existing hardware and software investment
- The need for new management control techniques
- Retraining for new operating skills
- Utilising PCs as workstations not dumb terminals
- Scepticism about the flexibility and power of desktop devices
- Confidence about stability

- Inertia
- No universal acceptance that the PC is the strategic way.

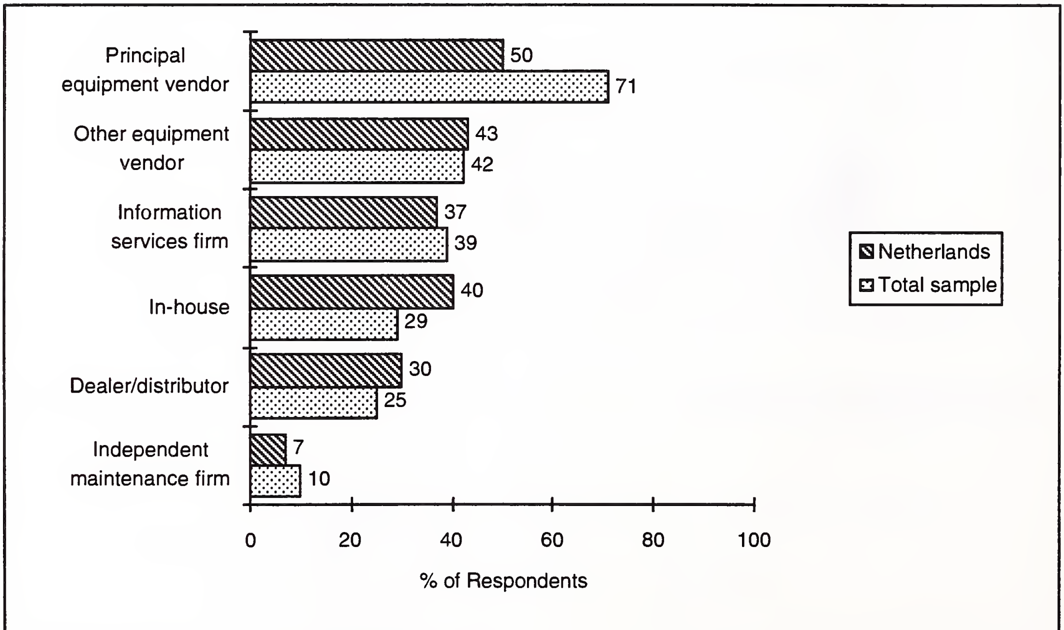
C
Use of Service Vendors

1. Current Use of Vendors

Exhibit V-44 shows the distribution for the Netherlands sample in respect of vendor supply of LAN related support services.

Exhibit V-44

Providers of LAN Support Services - Netherlands



Sample of 30 respondents. Multiple responses. (Ref. Q15a)

Source: INPUT

Some further appreciation of the types of services provided by vendors can be obtained from the listing of user comments included in Exhibit V-45.

Exhibit V-45

Types of LAN/Desktop Services Provided by External Vendors- Netherlands

equipment warranty & 3rd party maintenance

software support for main applications/MRP implementation

product only - no LAN services

PC equipment/peripherals/operating system/hardware maintenance

IBM: hardware/maintenance; shop around for PC products/software; central IS has major influence on everything

supply of PC/netware/modems & comms equipment/PC application software

mainly equipment & software products/supply of gateway & bridging products

fairly low-key services - current network is small

mostly installation/connectivity/hardware & network support

netware & comms equipment/design/installation - when required

contract will involve supply/installation/all supporting services

IBM: all maintenance & O/S support / PC dealer: supply of PC's & PC software

most services provided in-house, exc. product purchase

use a no. of PC companies for LANs - accessories/comms & software

PC support/netware/software/utilities

hardware/system configuration & maintenance; HP/Sun provide CAD stations

software application support

CAD terminals/software supply & support

very low key - mainly hardware maintenance

maintenance/site services/cabling etc.

do not contract out many services

networking products/network support

procurement arrangement/annual tenders - all types of networking/IT services

supply of networking tools, cabling etc.

policy of in-house (parent co.) provision

small LAN - v. limited services involved

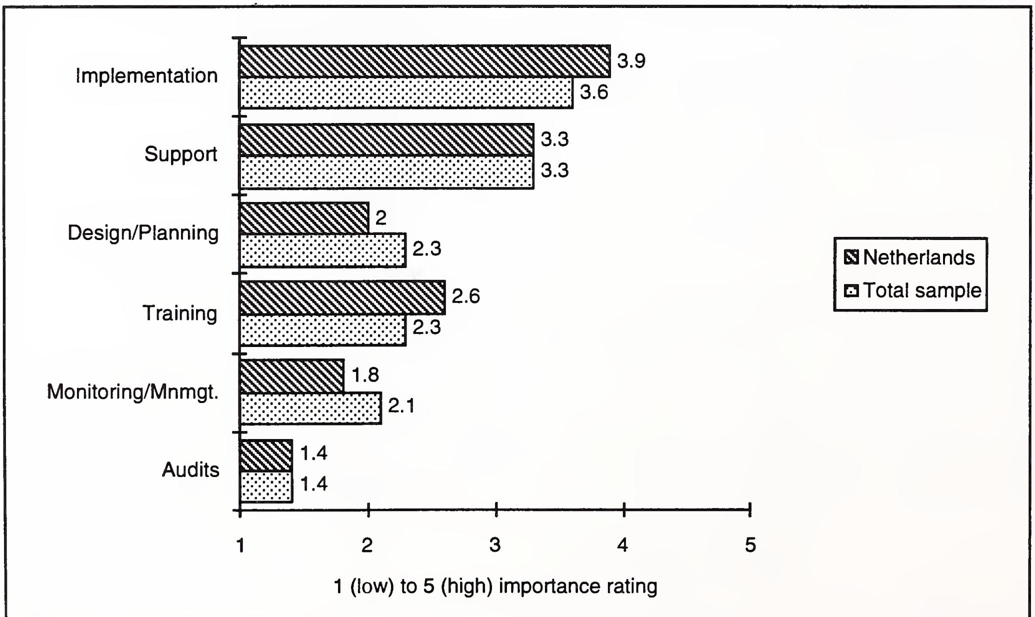
hardware/cabling requirements/cards - v. few services as LAN is small

2. Likelihood of Using External Vendors

Exhibit V-46 shows the distribution for the Netherlands sample in respect of the likelihood of using vendors to supply LAN related support services.

Exhibit V-46

Likelihood of Using External Vendor Services — Netherlands

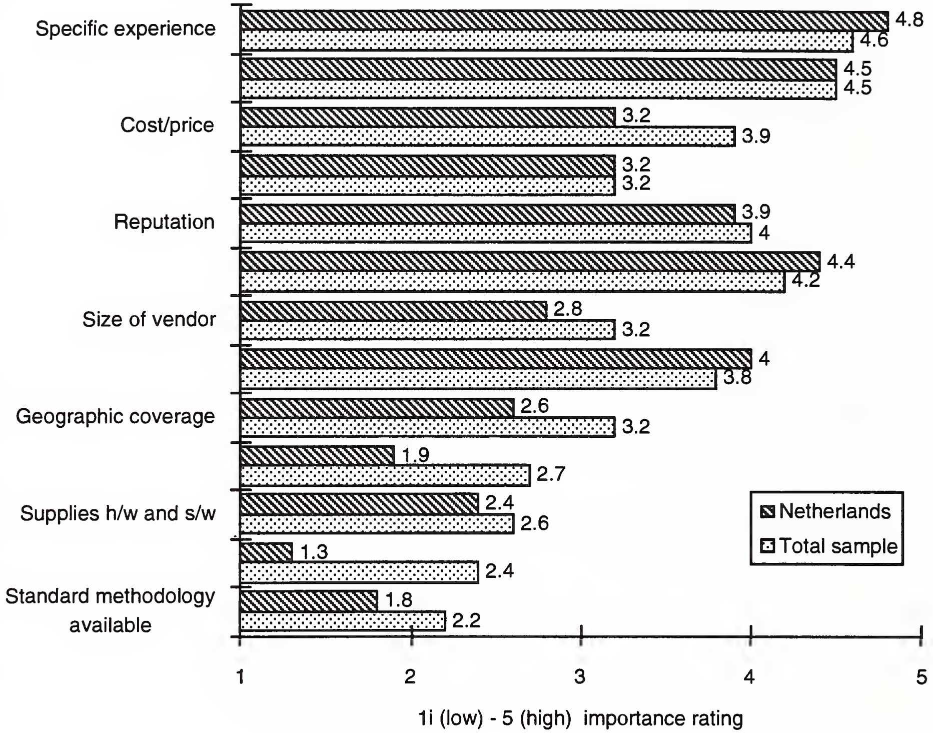


Sample of 30 respondents: (Ref:Q16) *Source: INPUT*

The criteria most favoured by users for selecting the use of external vendors for LAN/Desktop support are indicated in Exhibit V-47.

Exhibit V-47

Criteria for Selecting External Vendor Services — Netherlands



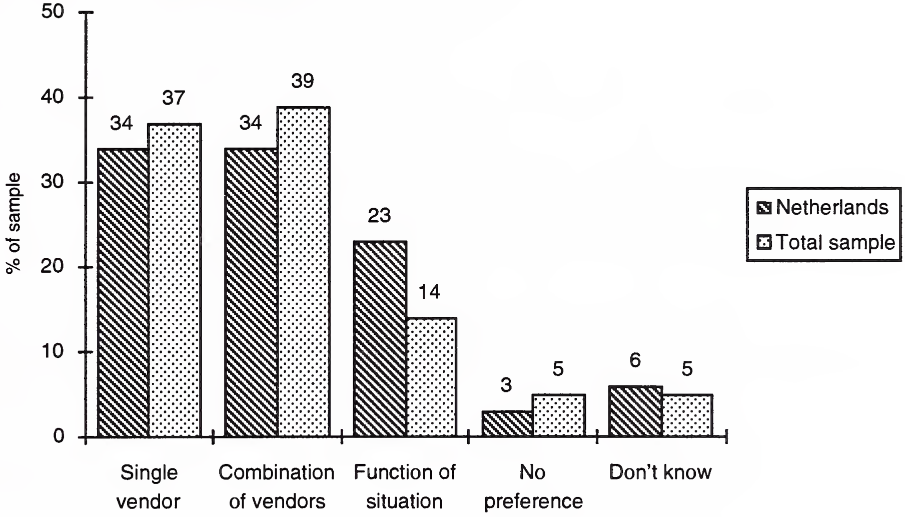
Sample of 30 respondents: (Ref:Q16) *Source: INPUT*

Other criteria mentioned by users included the vendor's cable and utilisation skills, experience with particular development tools, specific CAD knowledge, LAN design, Ethernet knowledge and preferred supplier status.

Respondents were questioned about their preferences in relation to the use of single generalist suppliers or for the use of a number of specialist vendors to support LAN services. Responses to this issue are analysed in Exhibit V-48.

Exhibit V-48

User Preference for Single or Multiple Specialist Vendors — Netherlands



Sample of 30 respondents. (Ref. Q18) *Source: INPUT*

The main reasons cited for utilising a single vendor were:

- Relationships
- Easier communications
- Restricted contact points
- One stop shopping.

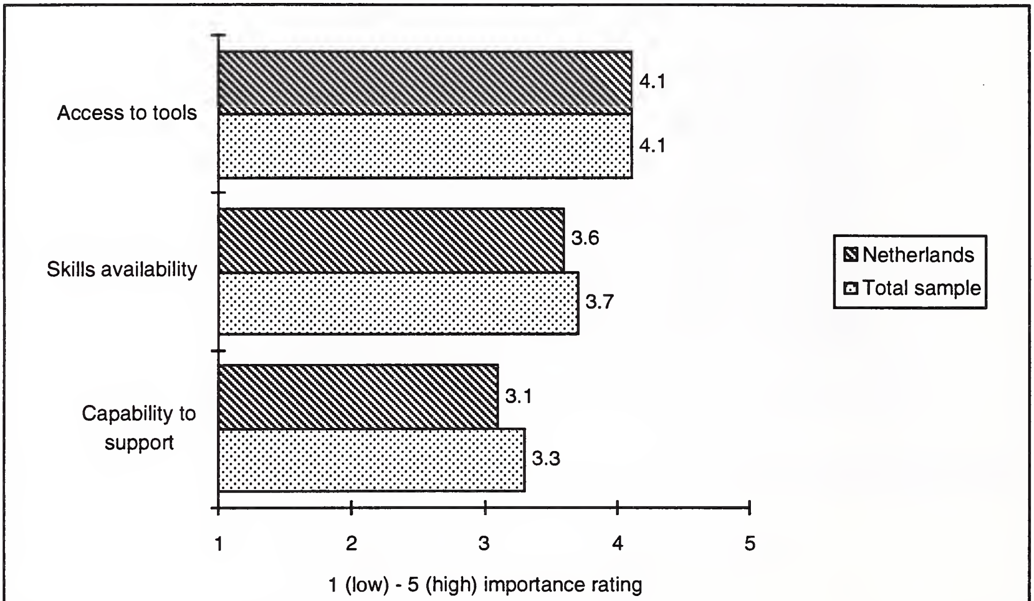
The main reasons cited for using a combination of specialist vendors were:

- Skills range needed too wide
- Best individual solutions.

Respondents were also specifically questioned about the importance of three factors which were considered to be of key significance in the service vendor selection process. These were skills availability, access to tools and the perceived ability of the vendor to deal with difficulties in technological change and improvement. User responses are recorded in Exhibit V-49.

Exhibit V-49

Importance of Vendor Characteristics — Netherlands



Sample of 30 respondents: (Ref:Q19) *Source: INPUT*

It can be seen from Exhibit X-49 that only the *access to tools* factor stands out as being given a really strong rating. The only other factor mentioned within the Netherlands sample was cost-effectiveness.

VI

Portugal

The data from the Portuguese sample is analysed in this chapter.

Section A examines the subject of LAN/desktop support services and the current allocation of responsibility for their provision.

Section B focuses on the current use of external services vendors for the provision of LAN/Desktop services and the attitudes of respondents towards the use of external vendors for the future provision of these services.

A

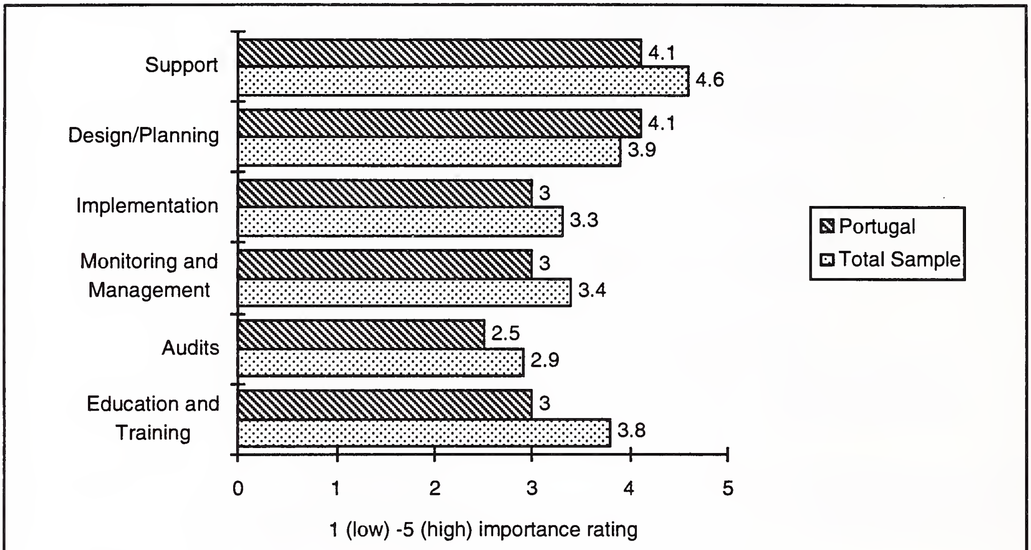
LAN Support Services

1. Key LAN Services

Exhibit VI-1 shows the importance ratings for the various LAN related services that can be provided to the user' site for the Portuguese sample.

Exhibit VI-1

Importance of LAN Support Services—Portugal



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

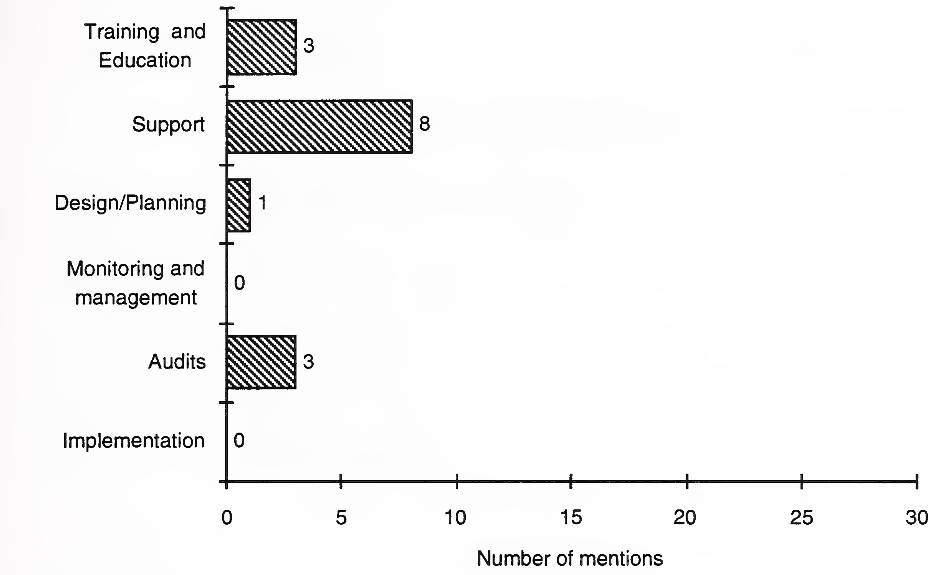
2. Responsibility Profiles

Exhibit VI-2 shows the profile for the various LAN related services that respondents reported were the responsibility of the work group. Exhibit VI-3 provides a comparison of the Portuguese profile with that for the total sample in percentage terms.

Exhibit VI-4 and 5, and Exhibits VI-6 and 7 show respectively those for the IS group and for independent third-party vendors.

Exhibit VI-2

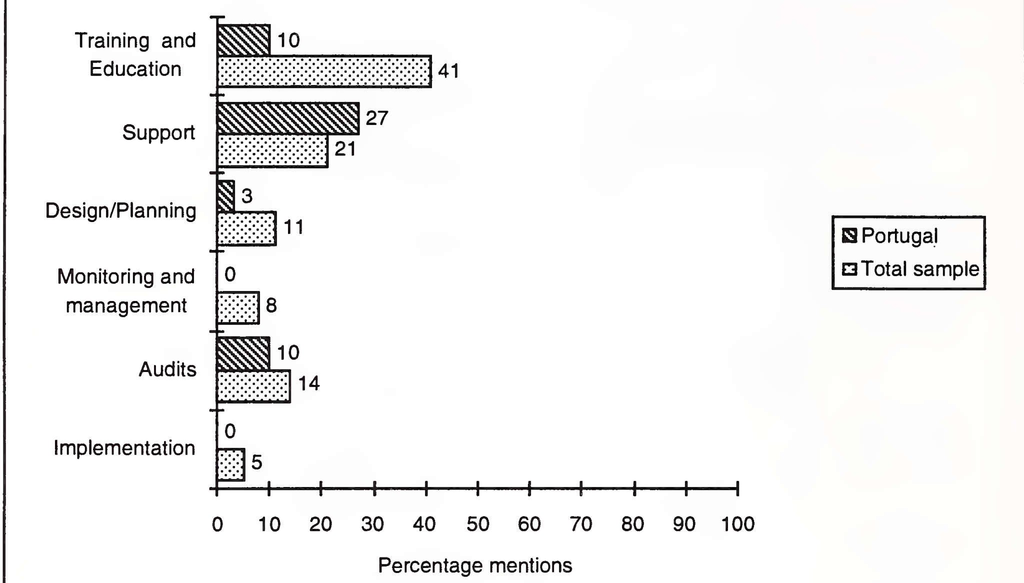
Workgroup Responsibility Profile—Portugal



Sample of 30 respondents. (Q11) *Source: INPUT*

Exhibit VI-3

Work group Responsibility Profile Comparison—Portugal

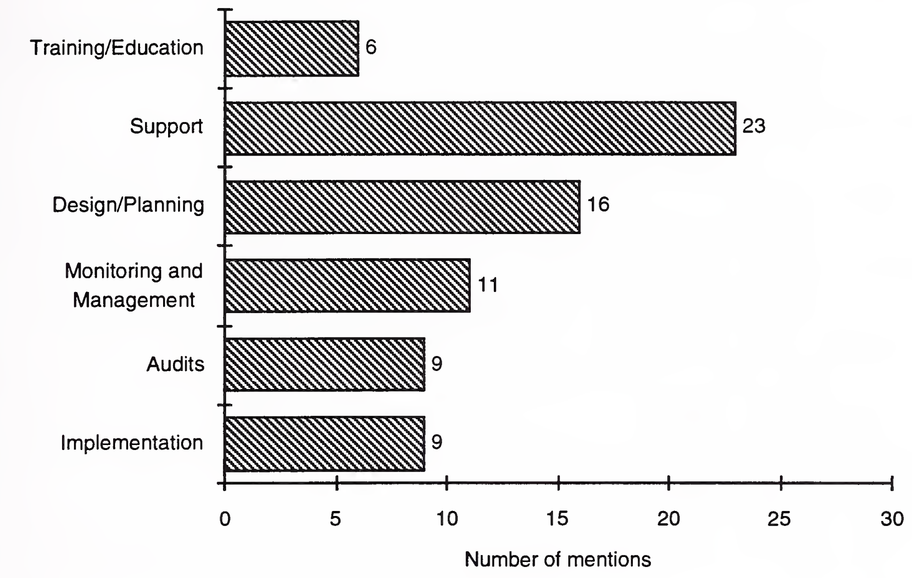


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit VI-4

IS Responsibility Profile—Portugal

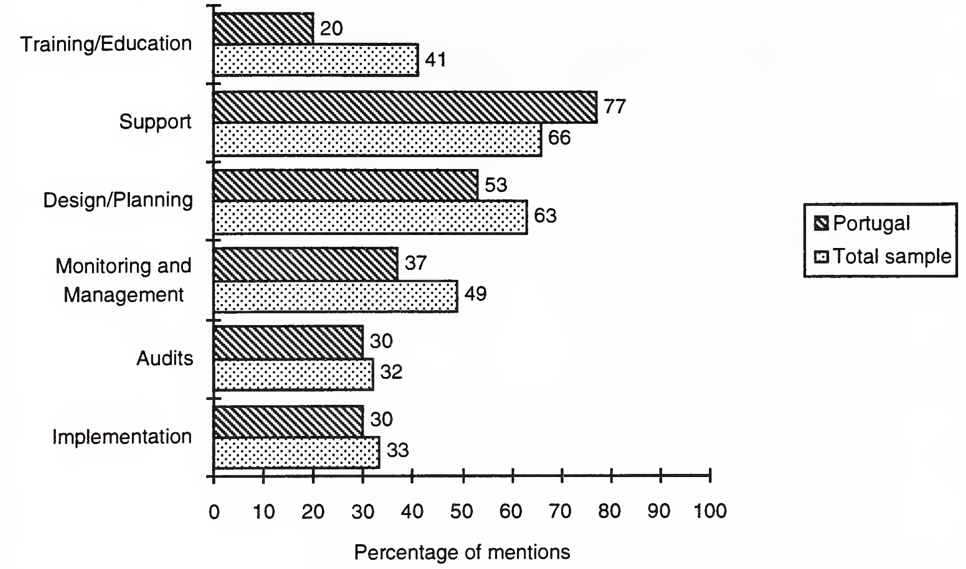


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit VI-5

IS Responsibility Comparative Profile—Portugal

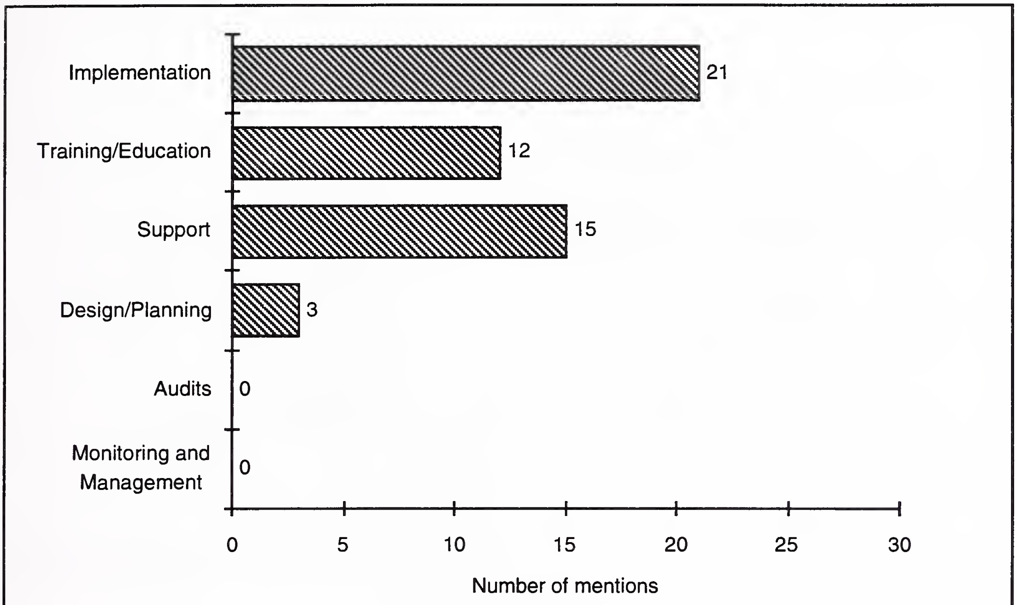


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit VI-6

External Vendor Responsibility Profile—Portugal

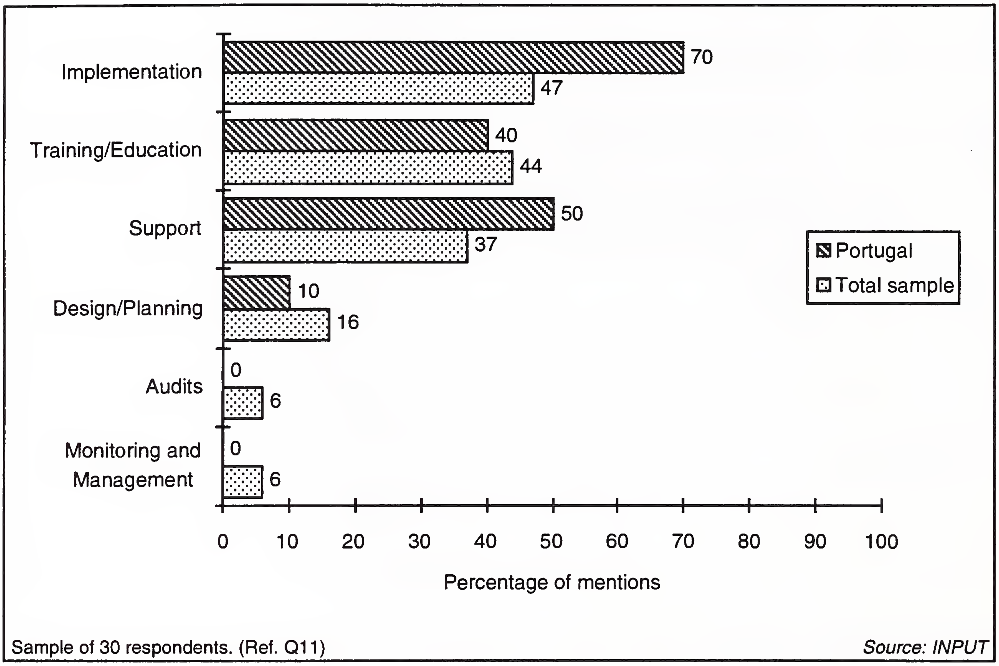


Sample of 30 respondents. (Ref. Q11)

Source: INPUT

Exhibit VI-7

External Vendor Responsibility Profile—Portugal



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

3. LAN Service Areas

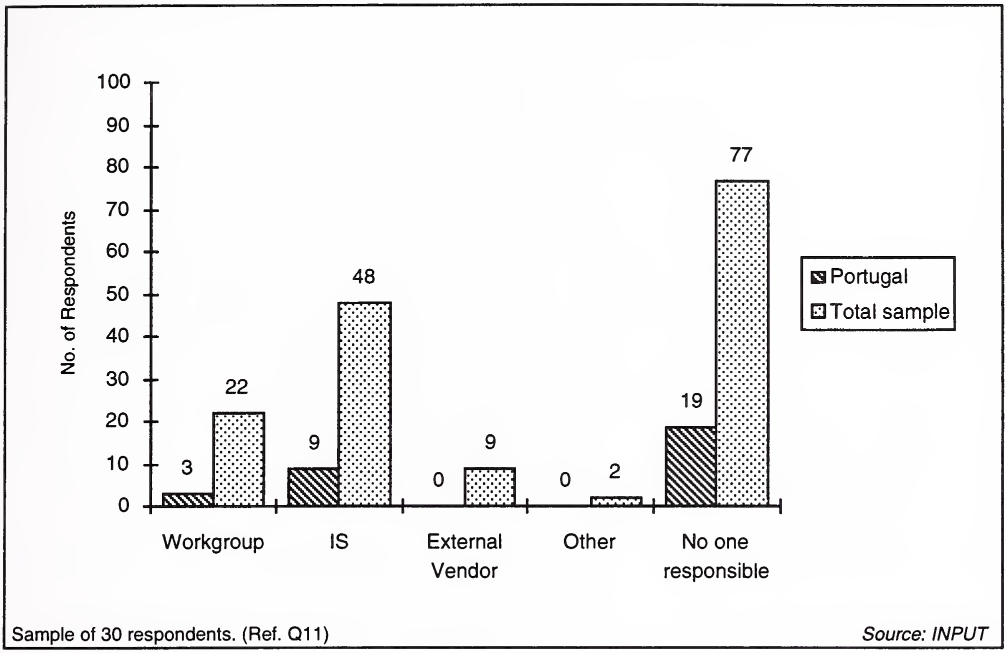
a. Audits

The overall importance rating for this activity was low for the Portuguese sample at 2.5.

Exhibit VI-8 shows the responsibility profile for the LAN/desktop audit function.

Exhibit VI-8

LAN/Desktop Audit Function Responsibility Profile—Portugal



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

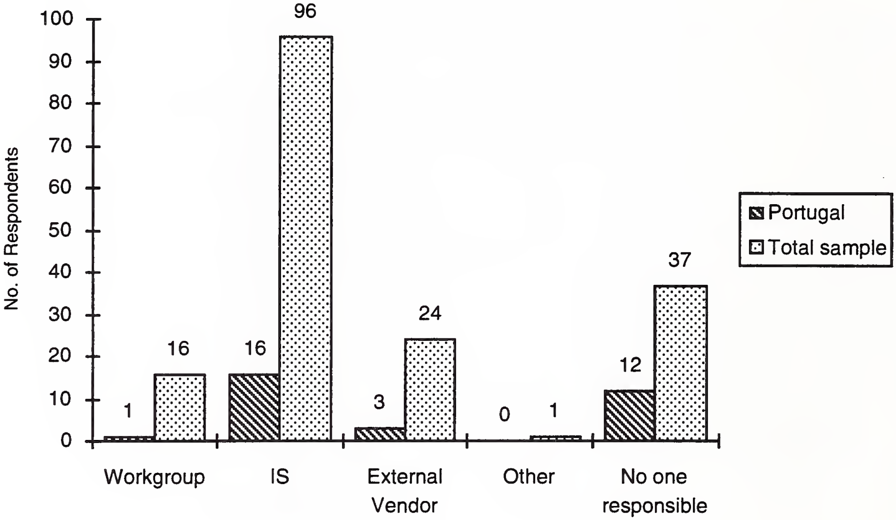
b. Design and Planning

The overall importance rating for this area was strong at 4.1.

Exhibit VI-9 shows the responsibility profile for the LAN/desktop design and planning function.

Exhibit VI-9

LAN/Desktop Design and Planning Function Responsibility Profile—Portugal



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

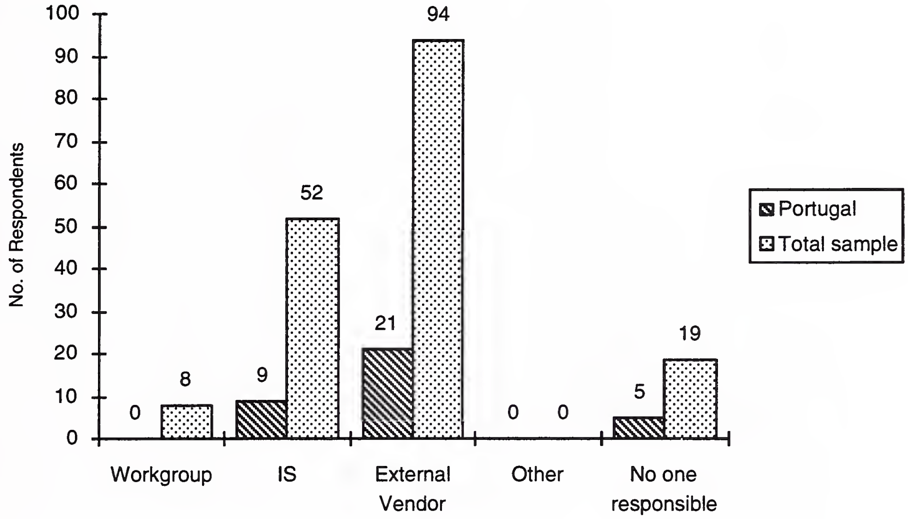
c. Implementation

The overall importance rating for this area was 3.0.

Exhibit VI-10 shows the responsibility profile for the LAN/desktop implementation function.

Exhibit VI-10

LAN/Desktop Implementation Function Responsibility Profile—Portugal



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

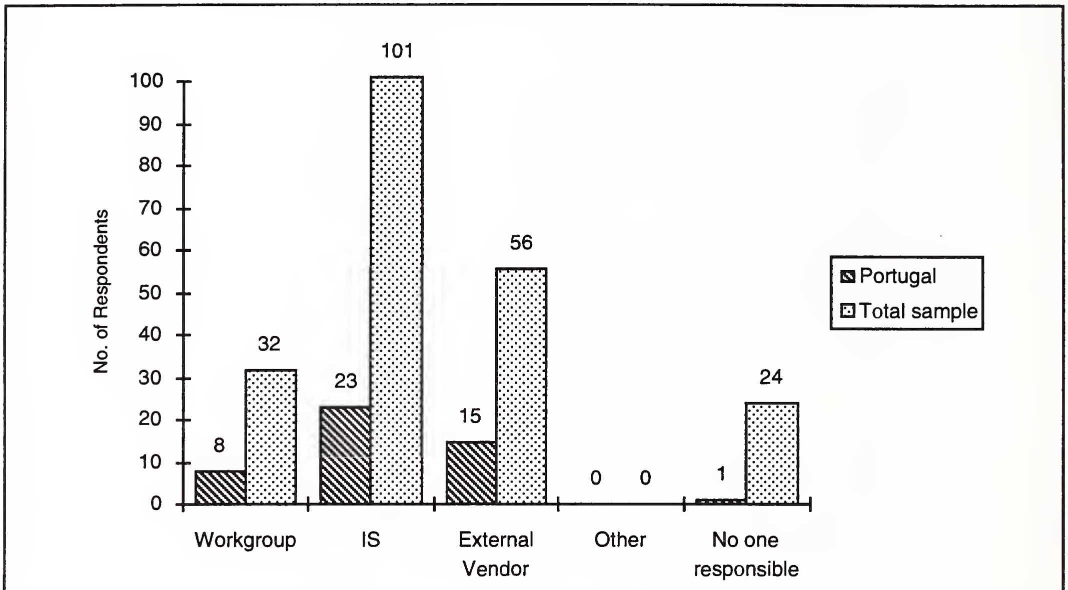
c. Support

The overall importance rating for this area was 4.1 for the users who gave a response on this question.

Exhibit VI-11 shows the responsibility profile for the LAN/desktop support function.

Exhibit VI-11

LAN/Desktop Support Function Responsibility Profile—Portugal



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

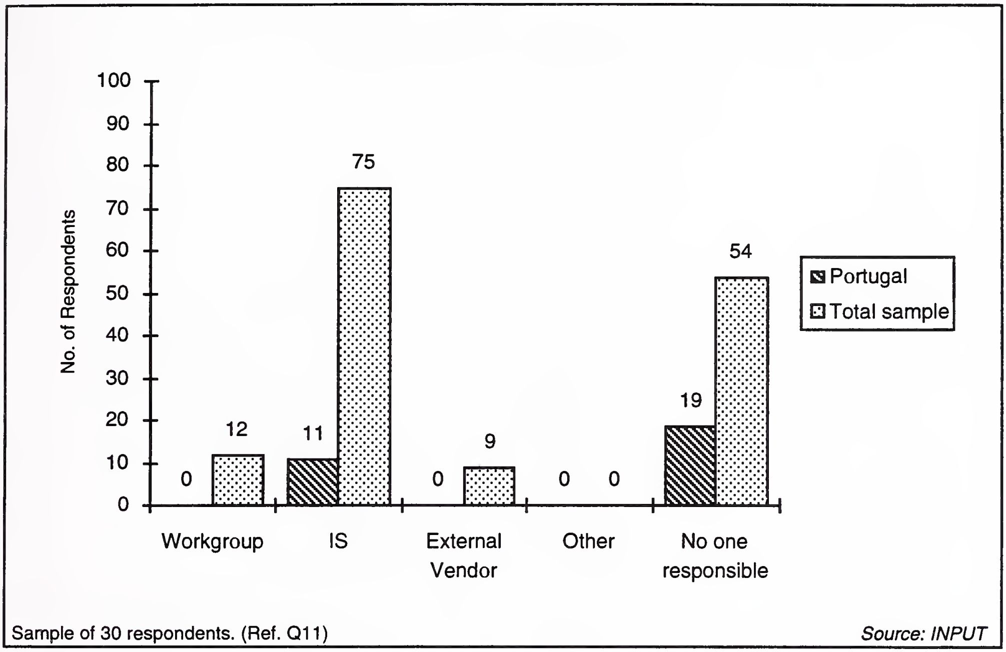
d. Monitoring and Management.

The overall importance rating for this area was 3.0.

Exhibit VI-12 shows the responsibility profile for the LAN/desktop monitoring and management function.

Exhibit VI-12

LAN/Desktop Monitoring and Management Function Responsibility Profile—Portugal



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

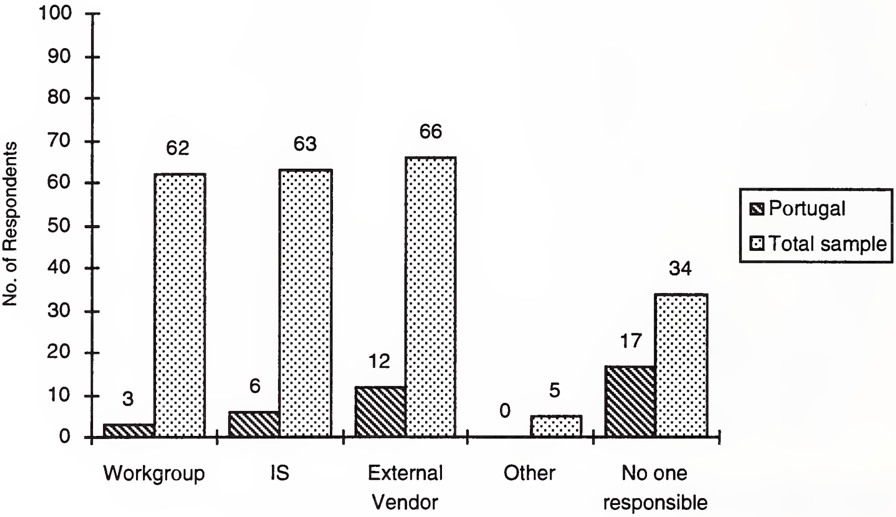
e *Training and Education*

The overall importance rating for this area was 3.0.

Exhibit VI-13 shows the responsibility profile for the LAN/desktop education and training function.

Exhibit VI-13

LAN/Desktop Training and Education Function Responsibility Profile—Portugal



Sample of 30 respondents. (Ref. Q11)

Source: INPUT

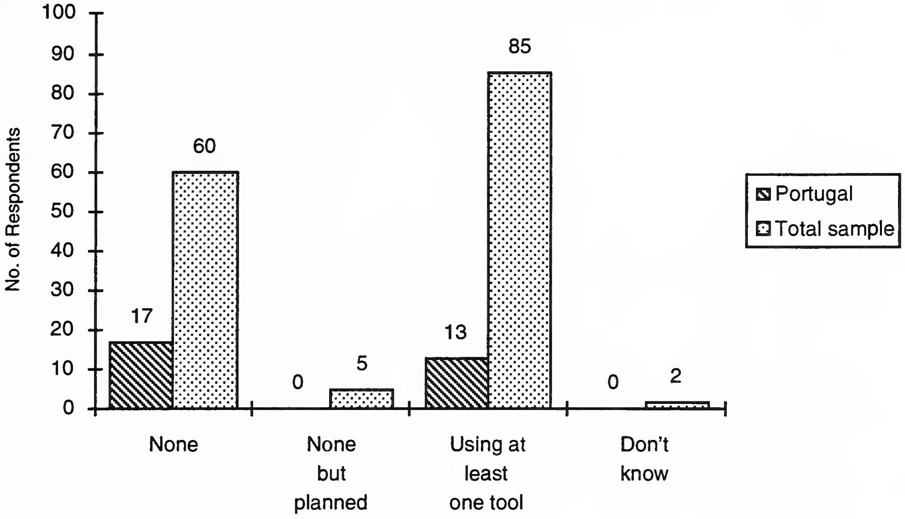
f. Methodologies and Tools

In connection with the monitoring and management function for the LAN respondents were also asked to state what management methodologies or tools they were using for automating any of the functions reported on in sub-sections *a.* through *e.* above.

The extent to which they were using tools or methodologies at all is shown in Exhibit VI-14 below.

Exhibit VI-14

LAN/Desktop Methodologies and Tools Usage—Portugal



Sample of 30 respondents. (Ref. Q12)

Source: INPUT

A Symantec product was mentioned twice. In addition mention was also made of Organiser Plus, QA, Lotus tools, FoxPro, Uniface and dBase.

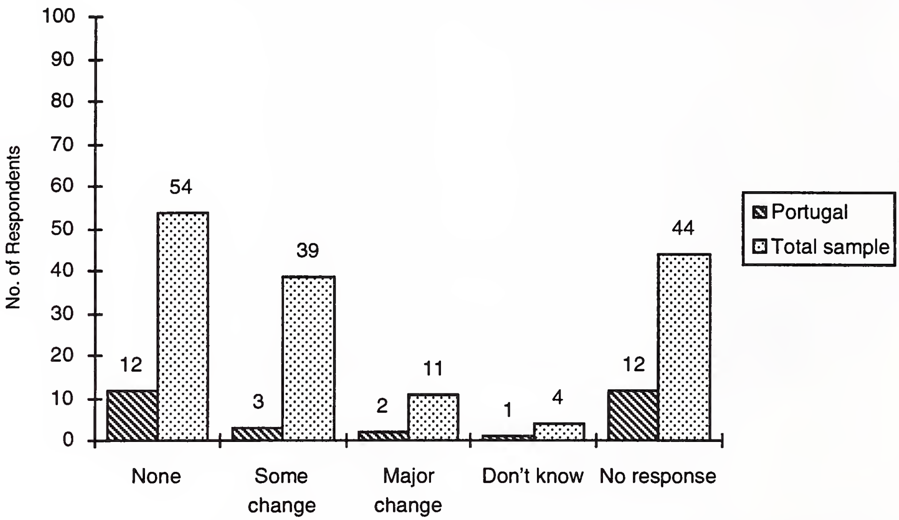
g. *Anticipation of Change in LAN/Desktop Environment*

The overall picture obtained from the Portuguese sample was one of little anticipated significant change in the LAN environment in the foreseeable future, i.e. over the next two years. However, there was a significant incidence of *no response* to this question in the Portuguese sample as was also the case for Spain.

Exhibit VI-15 shows the histogram of responses in respect of anticipated change.

Exhibit VI-15

Anticipated Change LAN/Desktop—Portugal



Sample of 30 respondents. (Ref. Q12)

Source: INPUT

Some insights into the reasons for change, or lack of anticipated change, in the LAN/Desktop support environment are provided by the user comments listed in Exhibit VI-16 below.

Exhibit VI-16

Reasons for Lack of Change in the LAN/Desktop—Portugal

will increase LAN quite rapidly; most of services could alter in some way

no changes foreseen

changes to implementation & support if get LAN for whole company would consider more cost-effective way to support LAN

outsource all LAN & PC support

will expand LAN by connecting standalone PCs/support function would not change

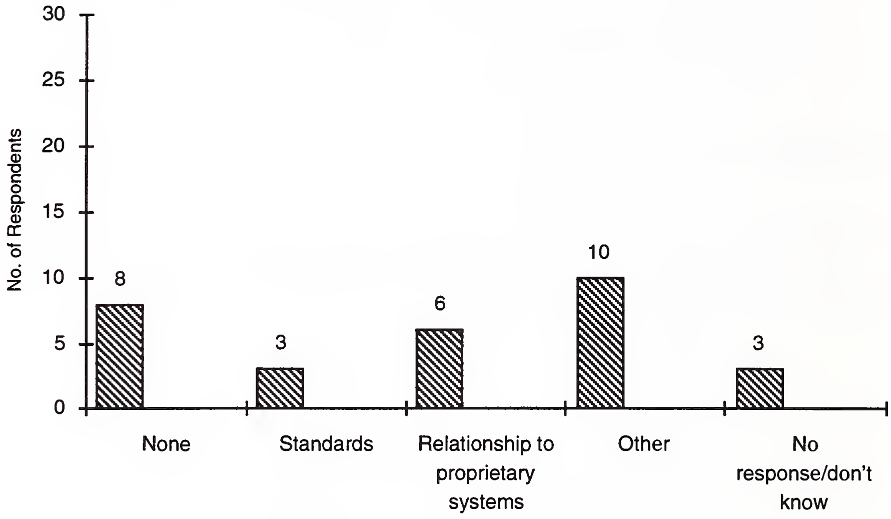
no changes anticipated

Sample of 30 respondents. (Ref. Q13) *Source: INPUT*

Respondents were also asked to comment on the potential barriers they perceived to the more successful use of LAN technology, Exhibit VI-17 shows an analysis of their responses.

Exhibit VI-17

Barriers to Using LAN/Desktop Technology—Portugal



Sample of 30 respondents. (Ref. Q14a)

Source: INPUT

The other category included the following responses:

- Head office intransigence
- Lack of network and comms skills
- Insufficient funds
- Decentralised departments that don't see the need to share data
- Convincing others of the need for multi-terminal access/data exchange
- Technological change.

Seven of the thirty Portuguese respondents had no plans for addressing LAN issues and problems. There were only a few respondents who mentioned open systems as the key to the solution, more emphasis seemed to be placed on internal organisational or management factors.

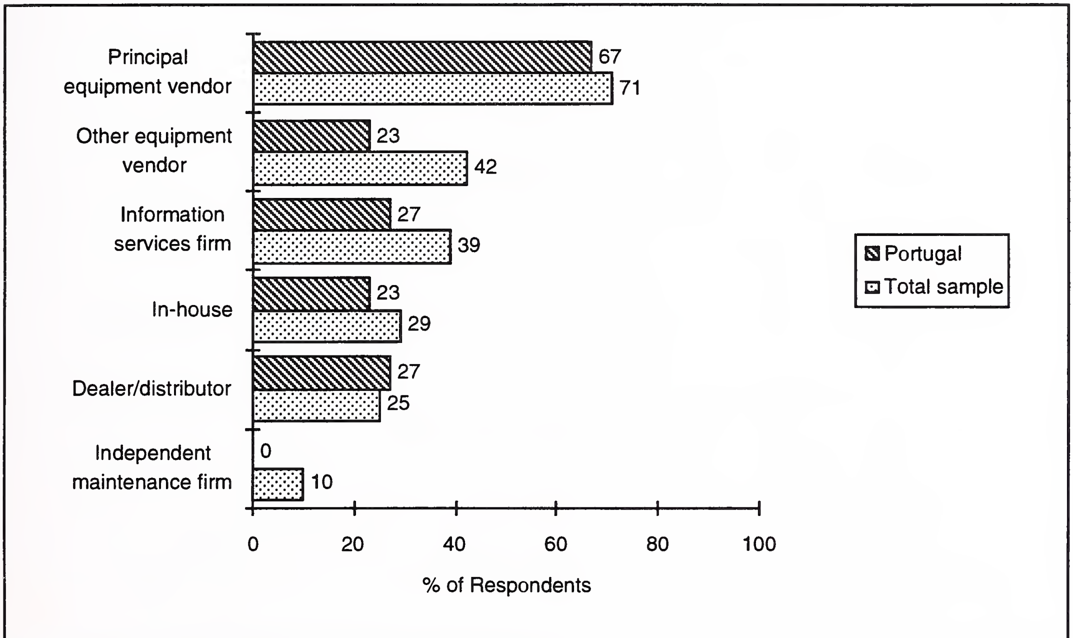
B
Use of Service Vendors

1. Current Use of Vendors

Exhibit VI-18 shows the distribution for the Portuguese sample in respect of vendor supply of LAN related support services.

Exhibit VI-18

Providers of LAN Support Services—Portugal



Sample of 30 respondents. Multiple responses. (Ref. Q15a)

Source: INPUT

Some further appreciation of the types of services provided by vendors can be obtained from the listing of user comments included in Exhibit VI-19.

Exhibit VI-19

Types of LAN/Desktop Services Provided by External Vendors—Portugal

purchasing equipment at best cost

maintenance/support; advice on connectivity/integration of other software

basic product and related services

Optima for comms; local dealers for PC hardware

network services & support; vendor provides hardware & maintenance

cabling, advice, network consulting and implementation

local PC supplier for S/W & H/W - supplied/installed original Ethernet

hardware & operating systems/warranty maintenance

several local PC suppliers for PC support, networking, S/W & PC utilities/tools

turnkey CAD systems

network maintenance & value-added services

supply & implementation assistance for network software

mainly PC products from local suppliers/no LAN services outsourcing

HP/Compaq for H/W & maintenance; US Robotics for modem/MUX supply

H/W, modems & comms equipment; support of individual functions

various PC suppliers

equipment maintenance & network support

all in-house with local PC company

hardware

needed services/some comms areas are further sub-contracted

various PC type/UNIX services

services provided in-house/buy PCs from local distributor

Apple Centre - overall solution

everything is through IS dept

network/site cabling/hardware

product services/media & documentation

hardware & maintenance/netware, services & support

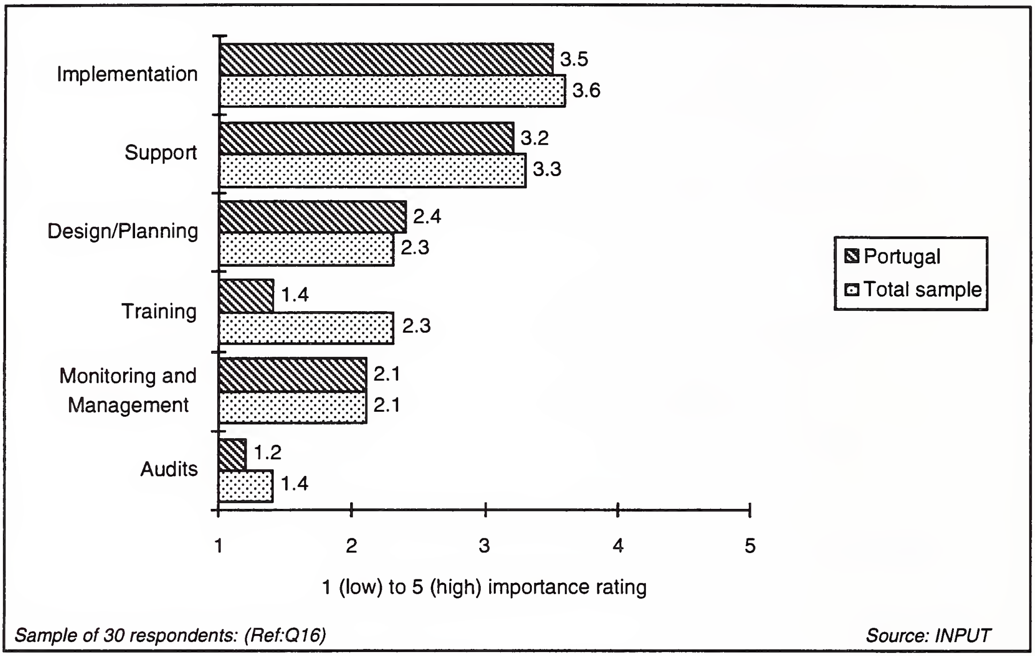
network & comms/design & implementation assistance

2. Likelihood of Using External Vendors

Exhibit VI-20 shows the distribution for the Portuguese sample in respect of the likelihood of using vendors to supply LAN related support services.

Exhibit VI-20

Likelihood of Using External Vendor Services—Portugal

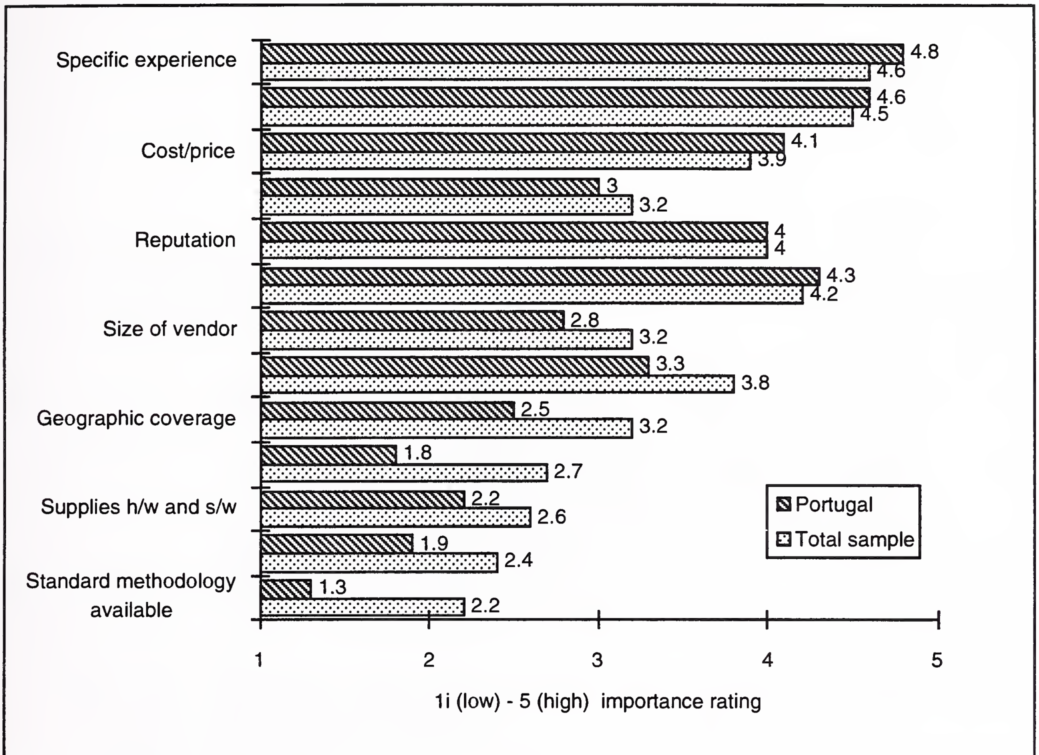


Sample of 30 respondents: (Ref:Q16) *Source: INPUT*

The criteria most favoured by users for selecting the use of external vendors for LAN/Desktop support are indicated in Exhibit VI-21.

Exhibit VI-21

Criteria for Selecting External Vendor Services—Portugal



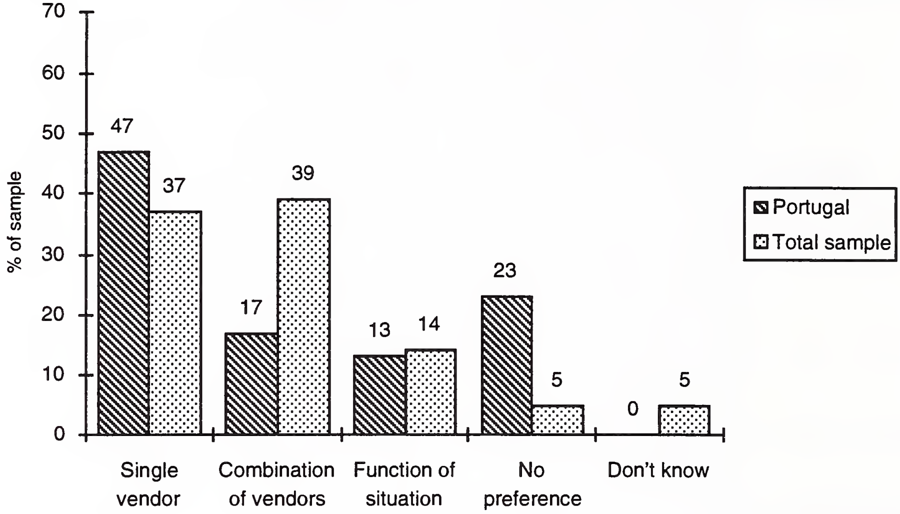
Sample of 30 respondents: (Ref:Q16) *Source: INPUT*

The only other criteria mentioned by users referred to the vendor's prior experience with their head office, presumably where this was in another country.

Respondents were questioned about their preferences in relation to the use of single generalist suppliers or for the use of a number of specialist vendors to support LAN services. Responses to this issue are analysed in Exhibit VI-22.

Exhibit VI-22

User Preference for Single or Multiple Specialist Vendors—Portugal



Sample of 30 respondents. (Ref. Q18)

Source: INPUT

The main reasons cited for utilising a single vendor were:

- Easier control
- Better terms
- Contractual reasons
- Long standing relationships.

The main reasons cited for using a combination of specialist vendors were:

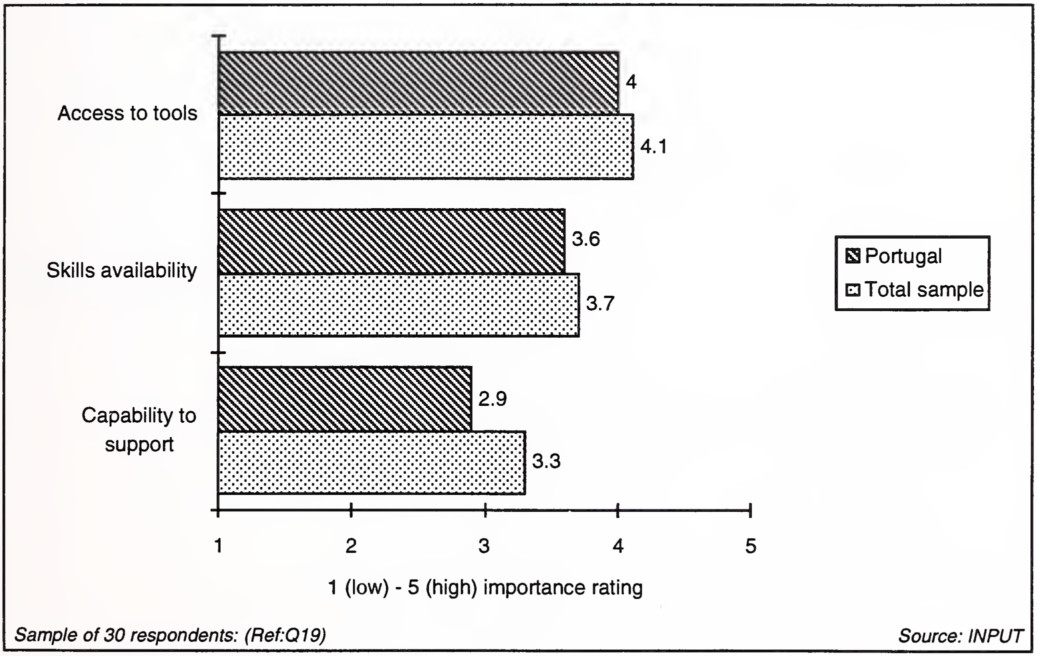
- Cross section of skills
- Risk reduction

- Maintain competition.

Respondents were also specifically questioned about the importance of three factors which were considered to be of key significance in the service vendor selection process. These were skills availability, access to tools and the perceived ability of the vendor to deal with difficulties in technological change and improvement. User responses are recorded in Exhibit VI-23.

Exhibit VI-23

Importance of Vendor Characteristics—Portugal



Sample of 30 respondents: (Ref:Q19) *Source: INPUT*

It can be seen from Exhibit VI-23 that only *access to tools* was rated highly by the Portuguese sample. No other factors were mentioned.

VII

United States

The data from the US sample is analysed in this chapter.

Section A examines the subject of LAN/desktop support services and the current allocation of responsibility for their provision.

Section B focuses on the current use of external services vendors for the provision of LAN/Desktop services and the attitudes of respondents towards the use of external vendors for the future provision of these services.

A

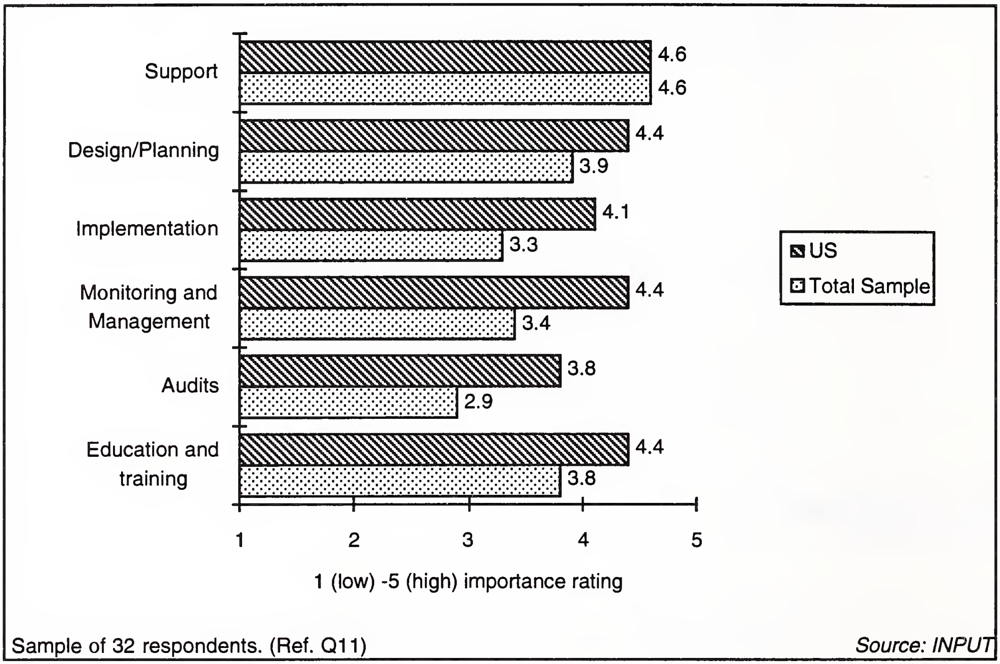
LAN Support Services

1. Key LAN Services

Exhibit VII-1 shows the importance ratings for the various LAN related services that can be provided to the user' site for the US sample.

Exhibit VII-1

Importance of LAN Support Services—United States



Sample of 32 respondents. (Ref. Q11)

Source: INPUT

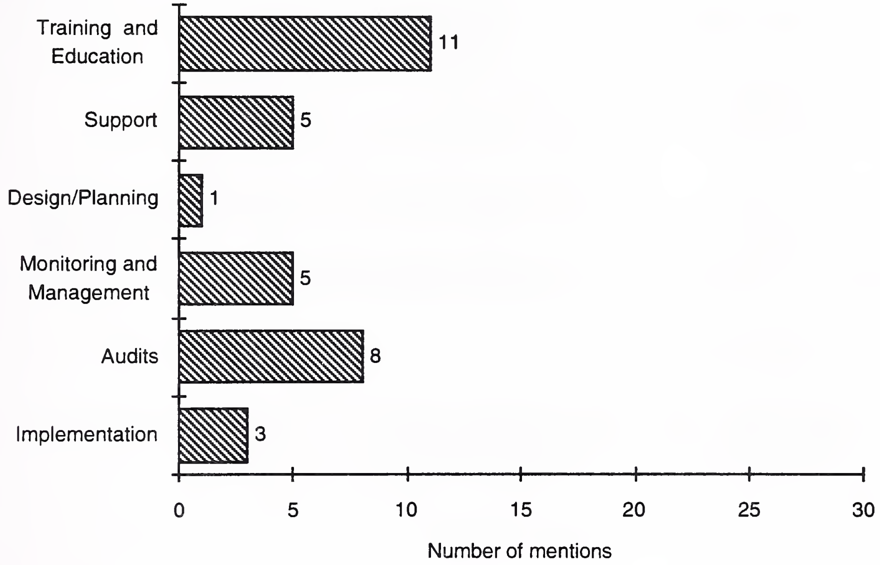
2. Responsibility Profiles

Exhibit VII-2 shows the profile for the various LAN related services that respondents reported were the responsibility of the work group. Exhibit VII-3 provides a comparison of the US profile with that for the total sample in percentage terms.

Exhibit VII-4 and 5, and Exhibits VII-6 and 7 show respectively those for the IS group and for independent third-party vendors.

Exhibit VII-2

Work group Responsibility Profile—United States

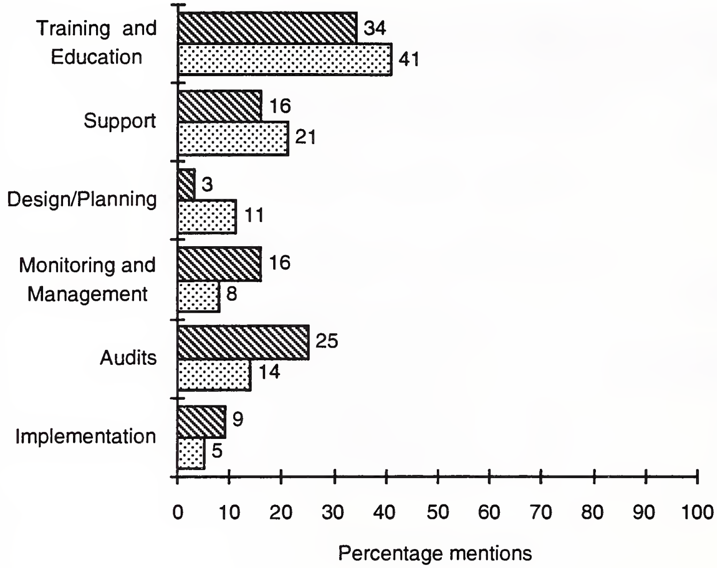


Sample of 32 respondents. (Ref. Q11)

Source: INPUT

Exhibit VII-3

Work group Responsibility Profile Comparison—United States

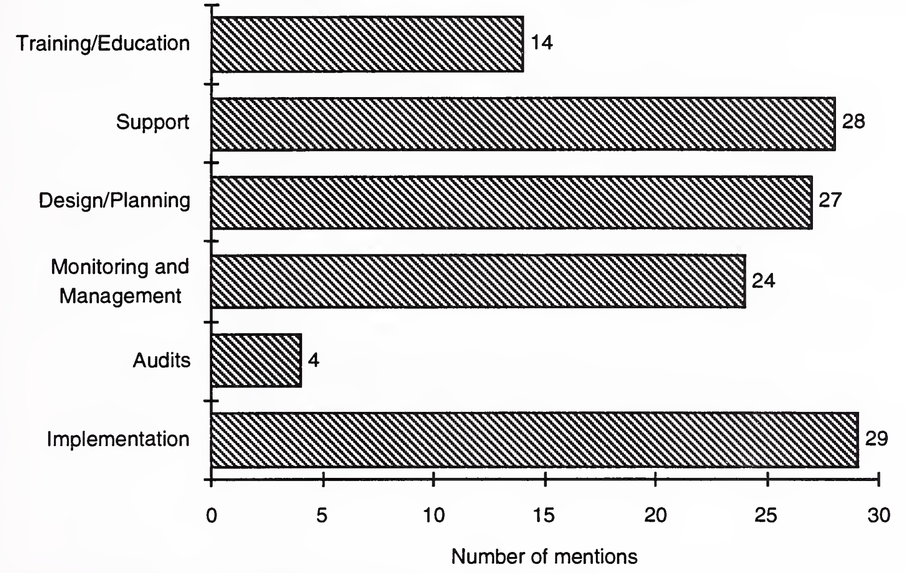


Sample of 32 respondents. (Ref. Q11)

Source: INPUT

Exhibit VII-4

IS Responsibility Profile—United States

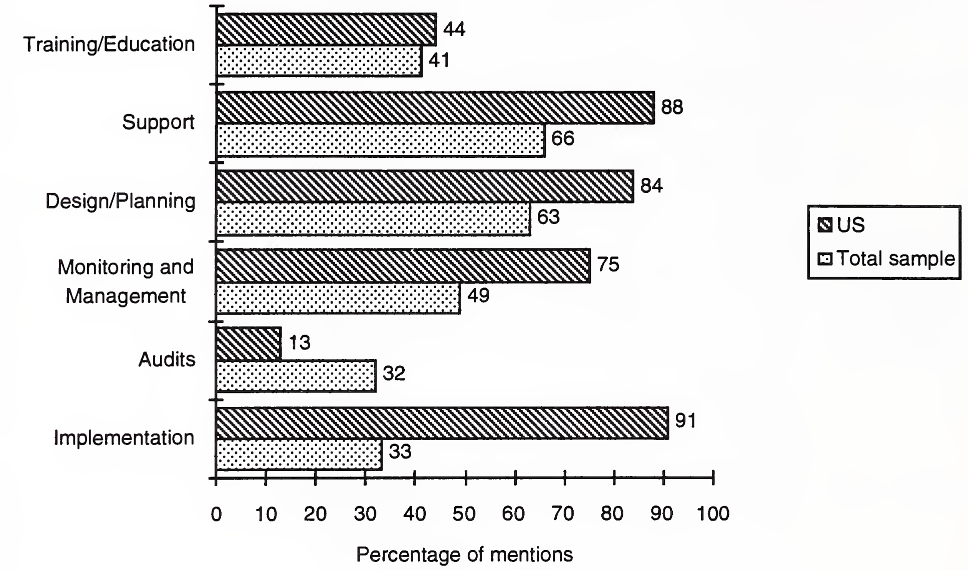


Sample of 32 respondents. (Ref. Q11)

Source: INPUT

Exhibit VII-5

IS Responsibility Comparative Profile—United States

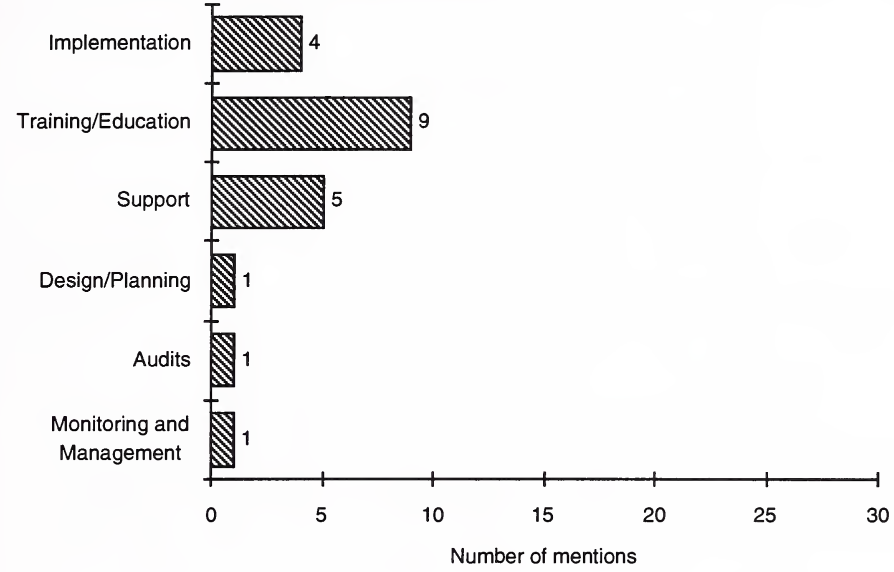


Sample of 32 respondents. (Ref. Q11)

Source: INPUT

Exhibit VII-6

External Vendor Responsibility Profile—United States

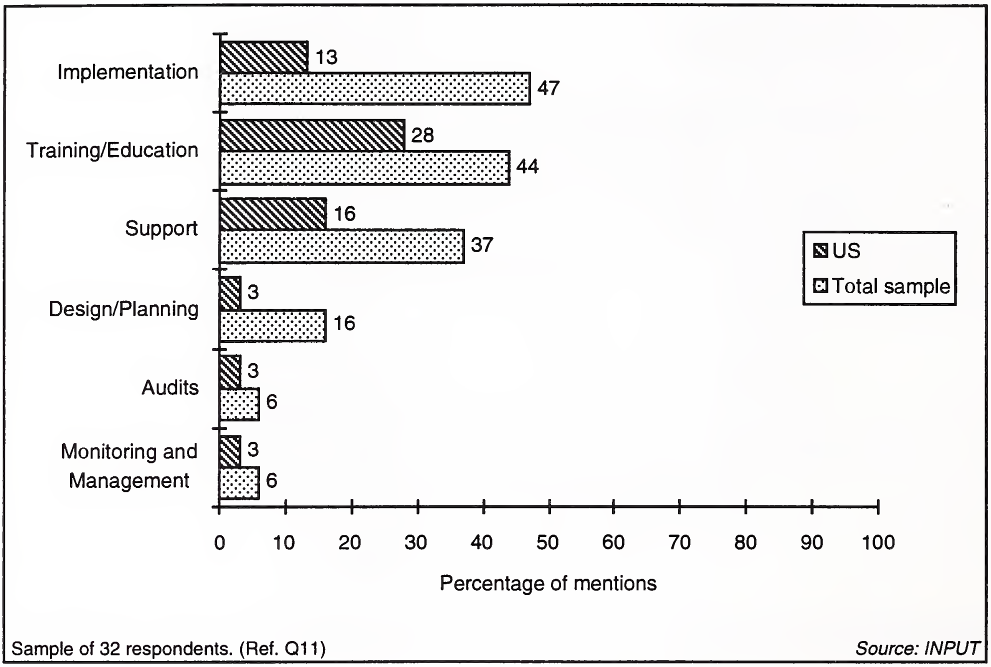


Sample of 32 respondents. (Ref. Q11)

Source: INPUT

Exhibit VII-7

External Vendor Responsibility Profile—United States



Sample of 32 respondents. (Ref. Q11) *Source: INPUT*

3. LAN Service Areas

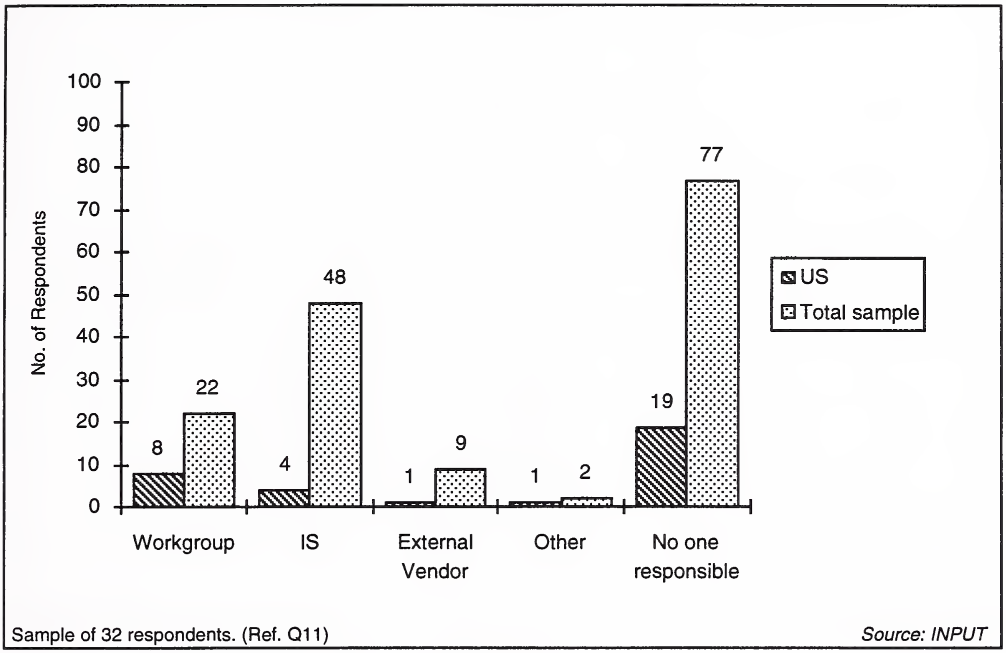
a. Audits

The overall importance rating for this activity for the US sample at 3.8 was the highest recorded amongst the countries researched.

Exhibit VII-8 shows the responsibility profile for the LAN/desktop audit function.

Exhibit VII-8

LAN/Desktop Audit Function Responsibility Profile—United States



Sample of 32 respondents. (Ref. Q11)

Source: INPUT

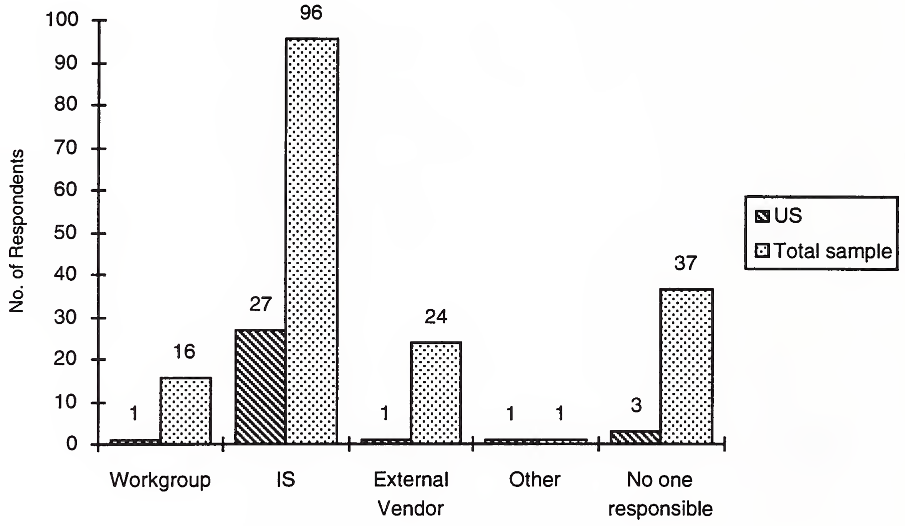
b. Design and Planning

The overall importance rating for this area was strong at 4.4.

Exhibit VII-9 shows the responsibility profile for the LAN/desktop design and planning function.

Exhibit VII-9

LAN/Desktop Design and Planning Function Responsibility Profile—United States



Sample of 32 respondents. (Ref. Q11)

Source: INPUT

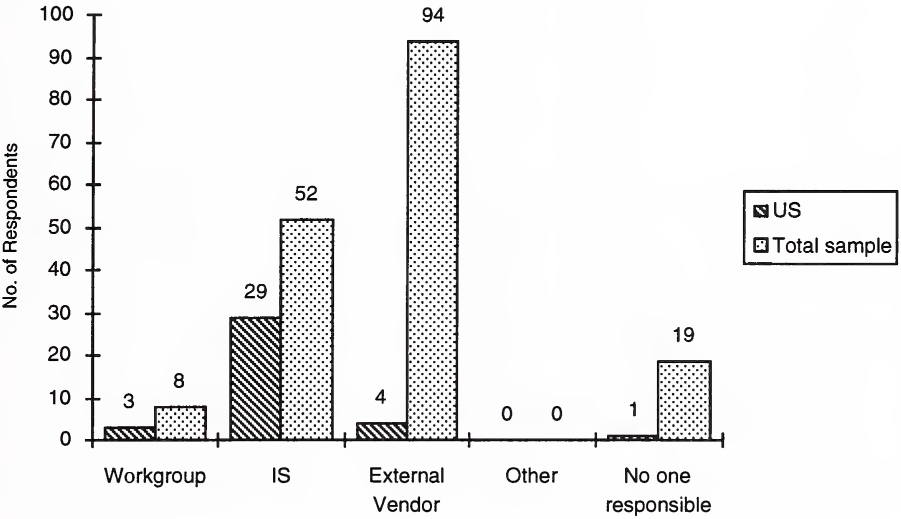
c. Implementation

The overall importance rating for this area was 4.1.

Exhibit VII-10 shows the responsibility profile for the LAN/desktop implementation function.

Exhibit VII-10

LAN/Desktop Implementation Function Responsibility Profile—United States



Sample of 32 respondents. (Ref. Q11)

Source: INPUT

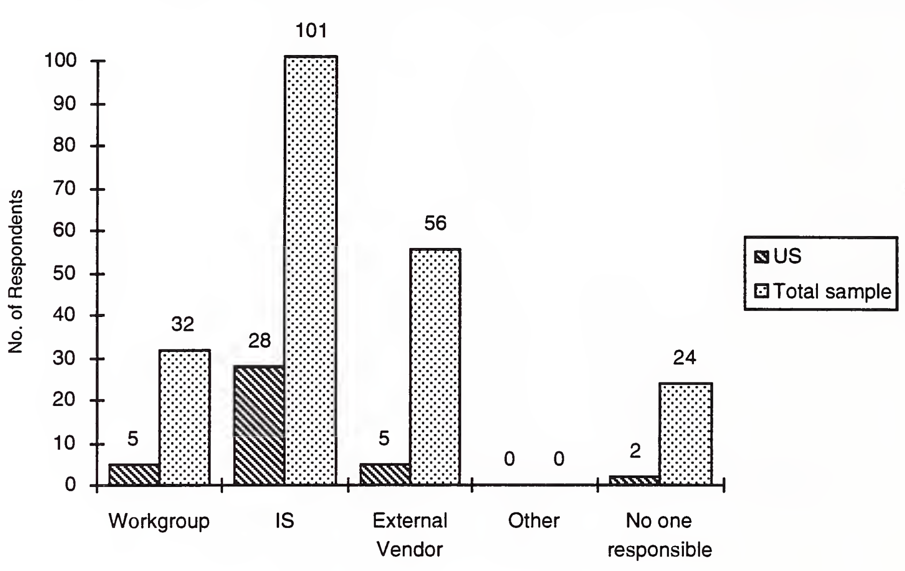
c. Support

The overall importance rating for this area was 4.6 for the users who gave a response on this question.

Exhibit VII-11 shows the responsibility profile for the LAN/desktop support function.

Exhibit VII-11

LAN/Desktop Support Function Responsibility Profile—United States



Sample of 32 respondents. (Ref. Q11)

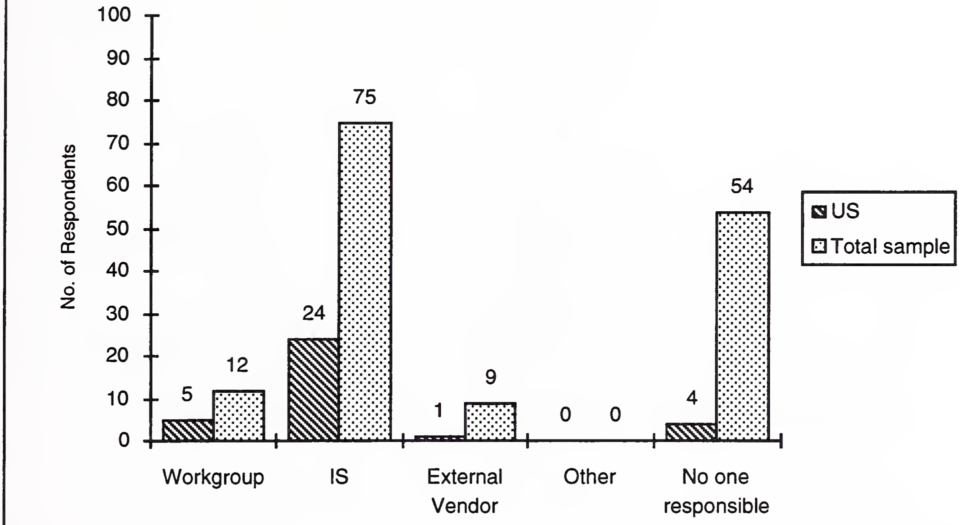
Source: INPUT

d. Monitoring and Management.
The overall importance rating for this area was strong at 4.4.

Exhibit VII-12 shows the responsibility profile for the LAN/desktop monitoring and management function.

Exhibit VII-12

LAN/Desktop Monitoring and Management Function Responsibility Profile—United States



Sample of 32 respondents. (Ref. Q11)

Source: INPUT

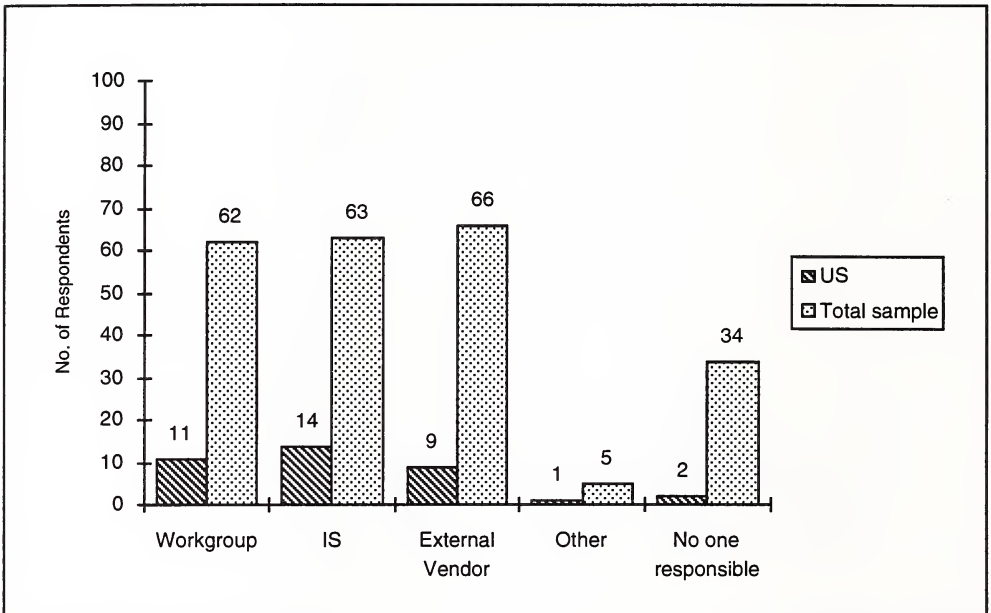
e Training and Education

The overall importance rating for this area was strong at 4.4.

Exhibit VII-13 shows the responsibility profile for the LAN/desktop education and training function.

Exhibit VII-13

LAN/Desktop Training and Education Function Responsibility Profile—United States



Sample of 32 respondents. (Ref. Q11)

Source: INPUT

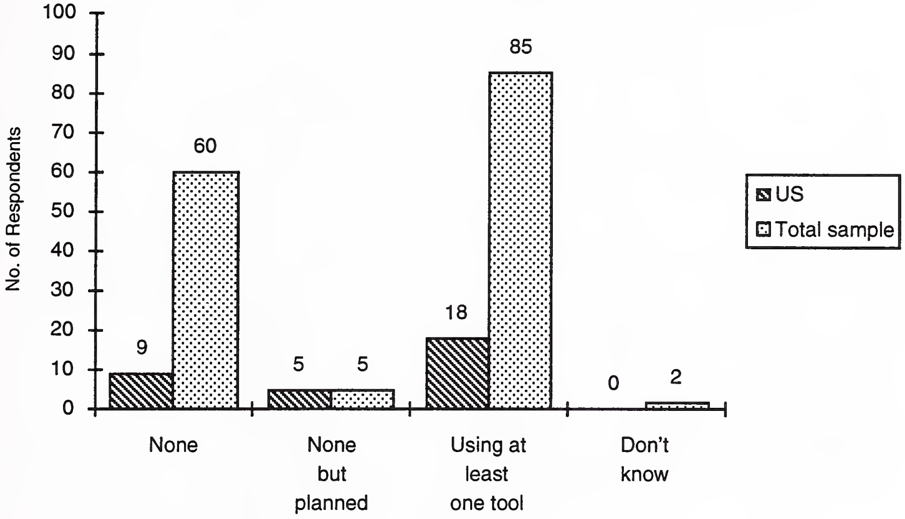
f. Methodologies and Tools

In connection with the monitoring and management function for the LAN respondents were also asked to state what management methodologies or tools they were using for automating any of the functions reported on in sub-sections *a.* through *e.* above.

The extent to which they were using tools or methodologies at all is shown in Exhibit VII-14 below.

Exhibit VII-14

LAN/Desktop Methodologies and Tools Usage—United States



Sample of 32 respondents. (Ref. Q12)

Source: INPUT

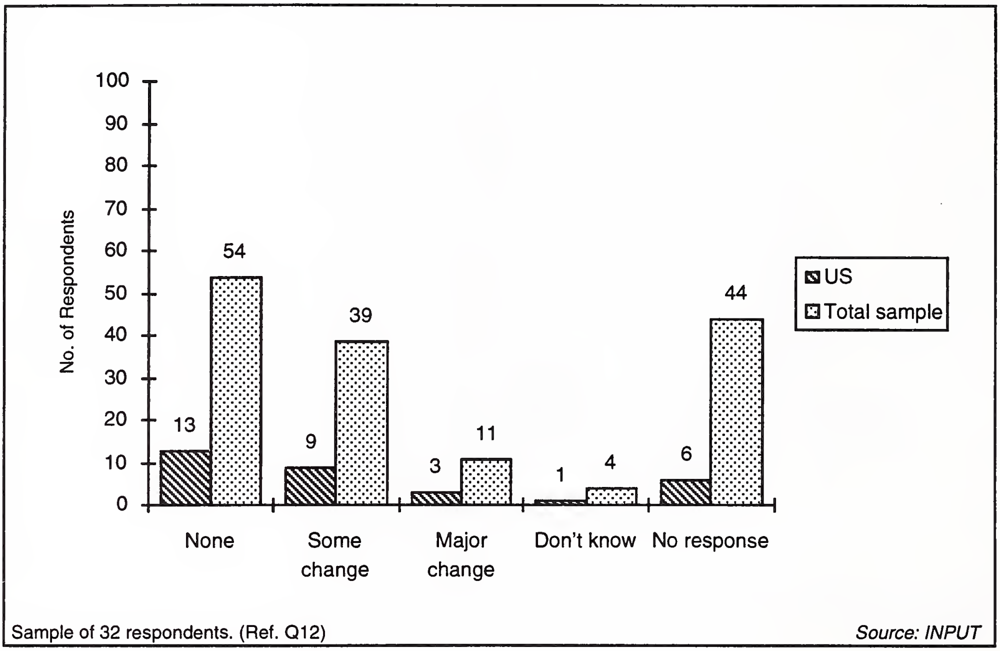
The most frequently mentioned tools were from Novel with 8 mentions. LAN Desk Manager was mentioned three times and the following tools were mentioned twice in each instance, Compaq tools, Norton tools and Sun Net Manager.

g. Anticipation of Change in LAN/Desktop Environment

The overall picture obtained from the US sample was one of little anticipated significant change in the LAN environment in the foreseeable future, i.e. over the next two years. Exhibit VII-15 shows the histogram of responses in respect of anticipated change.

Exhibit VII-15

Anticipated Change LAN/Desktop—United States



Sample of 32 respondents. (Ref. Q12)

Source: INPUT

Some insights into the reasons for change, or lack of anticipated change, in the LAN/Desktop support environment are provided by the user comments listed in Exhibit VII-16 below.

Exhibit VII-16

Reasons for Lack of Change in the LAN/Desktop—United States

none, none needed

no significant changes, internal staff developing knowledge

no vendor support/IS to do all, keep central control no, doing well

more efficient/complex 1-LAN system + net administrator overseeing

probably changes but no exact details yet, technology changing so inevitable

none (except Training & Education)

increased IS staffing to handle support

no change, still implementing client/server environment

probably will use more vendor support

IS to take more responsibility - tie together/control LAN, may be corporate-driven

will outsource if no govt funding through annual budgets

teams to get more sophisticated as system grows

none possible - existing vendors will remain until manufacturer changed

too soon to tell

wider networking/do in real time on day-to-day basis

going to try to do distributed network analysis

no change except to introduce AUDIT

Sample of 32 respondents. (Ref. Q13) *Source: INPUT*

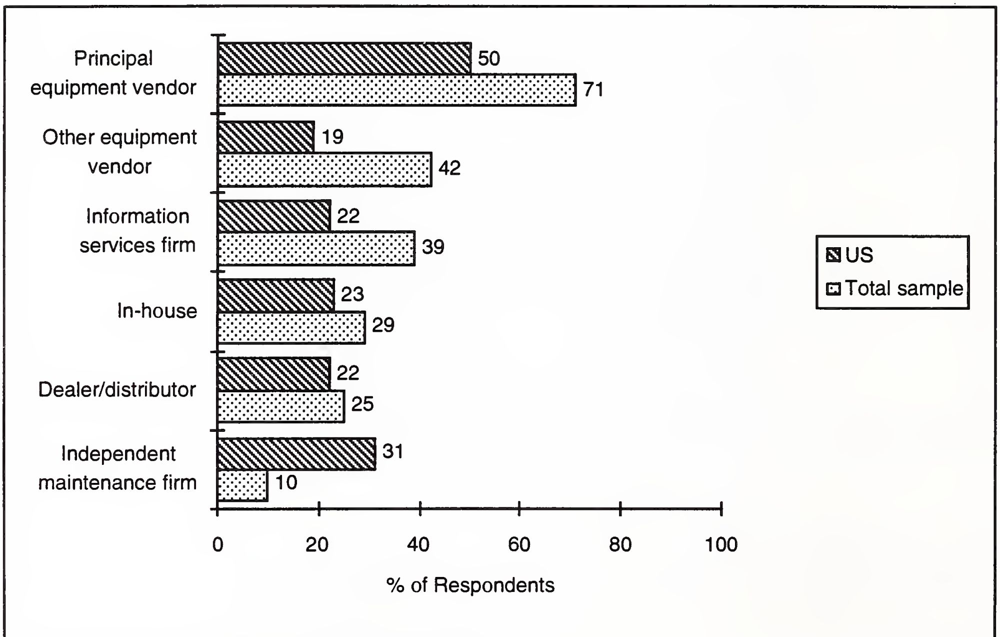
B
Use of Service Vendors

1. Current Use of Vendors

Exhibit VII-17 shows the distribution for the US sample in respect of vendor supply of LAN related support services.

Exhibit VII-17

Providers of LAN Support Services—United States



Sample of 32 respondents. Multiple responses. (Ref. Q15a)

Source: INPUT

Some further appreciation of the types of services provided by vendors can be obtained from the listing of user comments included in Exhibit VII-18.

Exhibit VII-18

Types of LAN/Desktop Services Provided by External Vendors—United States

Equipment (no maintenance programmes currently)

High end solutions (as consultants only)

Phone support & conflict resolution

Planning, implementation, product ordering, help with installation & follow-up

Maintenance & repair

In-house only - likes to keep full control

Support via vendor & IS dept

C & E. Certified network engineers for upgrades

Everything!

Maintenance & sales

Hardware maintenance

All services

All support done in-house

All done in-house

For warranty work

Basically supplying hardware & configuration

Do all services/support self; buy generic hardware based on best deal

Everything

IBM equipment support

Some sites contract whole job; some do install internally

IBM for hardware & software support

High level IS support

Product & maintenance

Support to remote locations/some cabling & DOS upgrades

Regeneration of file services/disaster recovery/maintenance of cable & H/W

We do everything

Everything

Maintenance (NAS)

Everything

Hardware maintenance

In-house administrator/Olivetti for backup help

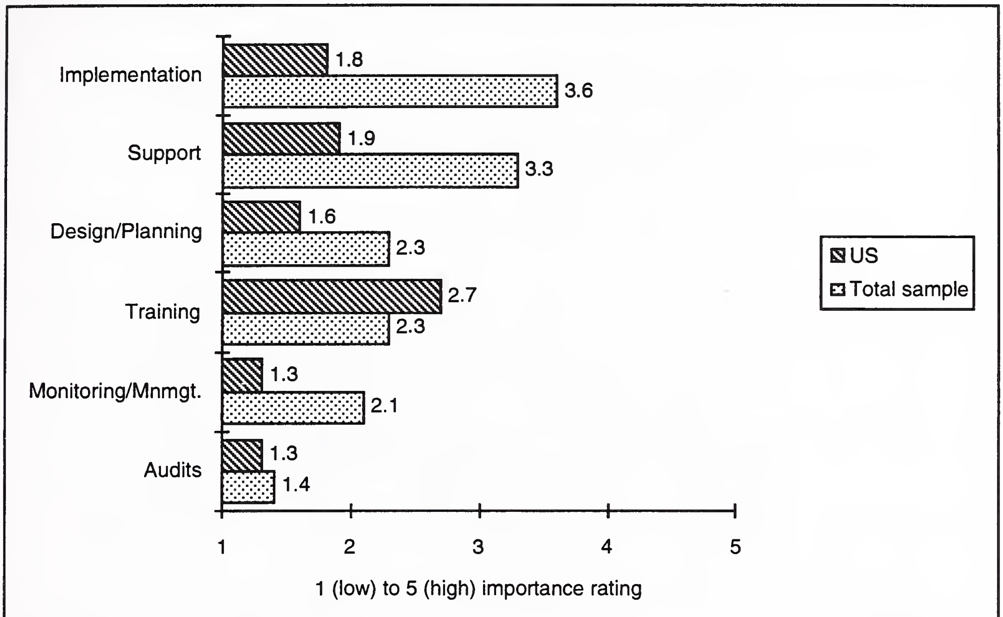
IBM - consultant/US West ACS as support services

2. Likelihood of Using External Vendors

Exhibit VII-19 shows the distribution for the US sample in respect of the likelihood of using vendors to supply LAN related support services.

Exhibit VII-19

Likelihood of Using External Vendor Services—United States



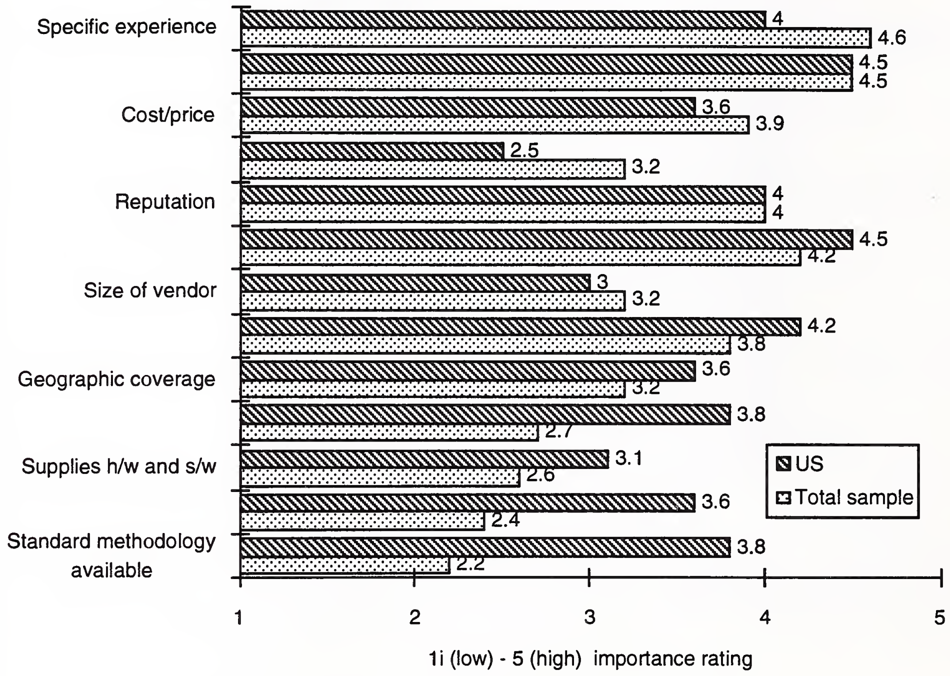
Sample of 32 respondents: (Ref:Q16)

Source: INPUT

The criteria most favoured by users for selecting the use of external vendors for LAN/Desktop support are indicated in Exhibit VII-20.

Exhibit VII-20

Criteria for Selecting External Vendor Services—United States



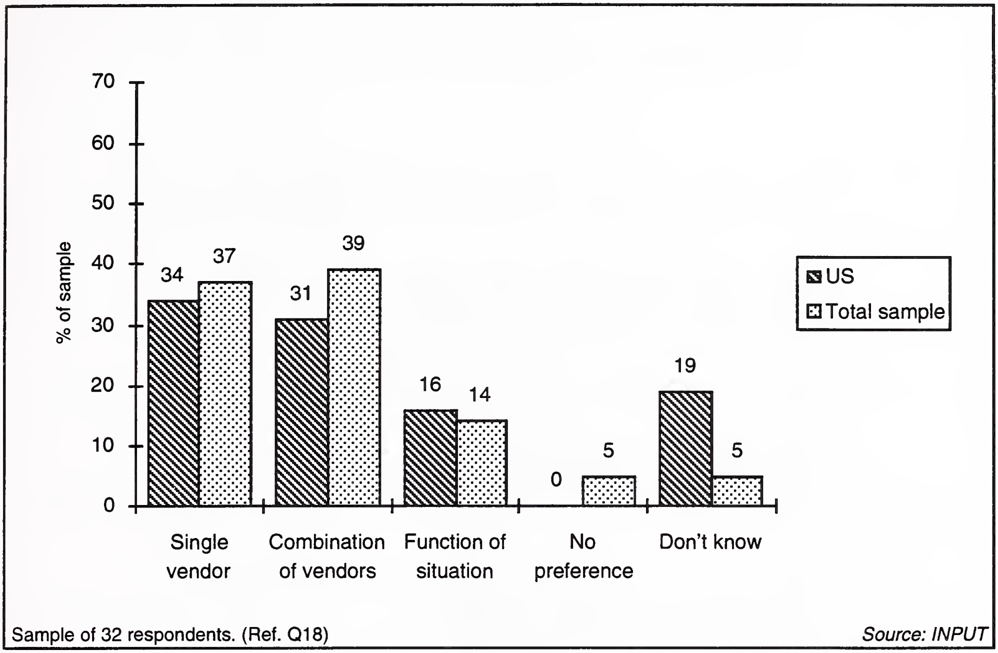
Sample of 32 respondents: (Ref:Q16)

Source: INPUT

Respondents were questioned about their preferences in relation to the use of single generalist suppliers or for the use of a number of specialist vendors to support LAN services. Responses to this issue are analysed in Exhibit VII-21.

Exhibit VII-21

User Preference for Single or Multiple Specialist Vendors—United States



Sample of 32 respondents. (Ref. Q18)

Source: INPUT

The main reasons cited for utilising a single vendor were:

- Convenience
- One interface
- Vendor gets to know system.

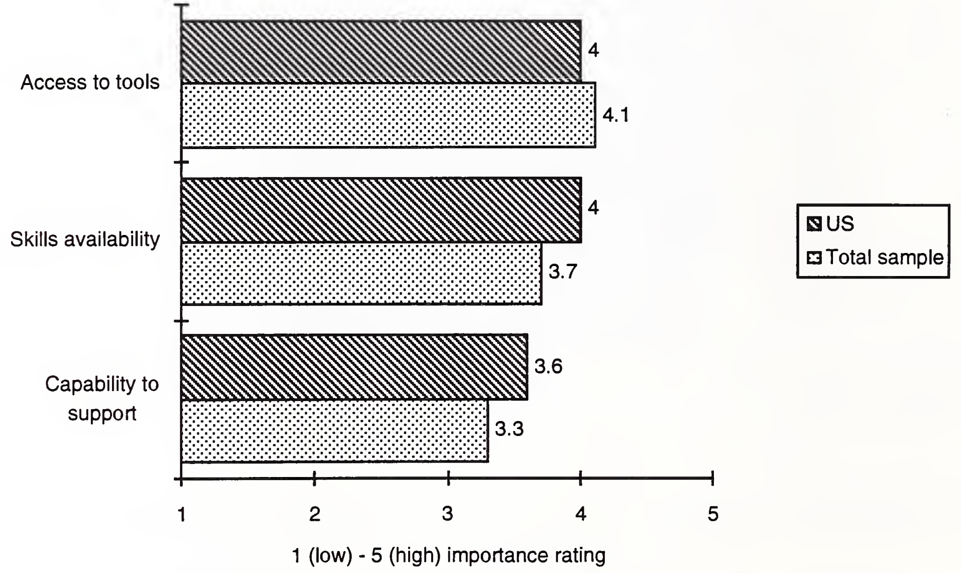
The main reasons cited for using a combination of specialist vendors were:

- Several fields to be covered
- Want best of breed in each field
- Specific/deep knowledge required.

Respondents were also specifically questioned about the importance of three factors which were considered to be of key significance in the service vendor selection process. These were skills availability, access to tools and the perceived ability of the vendor to deal with difficulties in technological change and improvement. User responses are recorded in Exhibit VII-22.

Exhibit VII-22

Importance of Vendor Characteristics—United States



Sample of 32 respondents: (Ref:Q19)

Source: INPUT

It can be seen from Exhibit VII-22 that both *access to tools* and skills availability received high ratings. No other factors were mentioned.

In the US sample a final question was put to respondents regarding what advice they could proffer to vendors operating in the LAN/Desktop environment. The responses to this question are included below as Exhibit VII-23.

Be flexible

Provide high level of support (experienced technicians)

Don't!

Ensure all personnel trained in all areas/protocols & can interconnect

Be v responsive to questions/fast responses needed + good working relationship

Make sure they know what they're doing

It's your job to do the best you can & get the specialist to support you

Be in LAN servers/anyone can help with Novell but not LANs/reason not use external vendors!

Good Luck!

Be cheap!

Vendors don't listen to client needs

Make sure you understands system thoroughly

Must be able to answer questions

Price is not the most important - quality is

Specialise in a few areas not broad-based. Help when specific problems arise

Good luck!

Be prepared to talk to many people in lots of areas - there are no central answers

Biggest thing is to make equipment uniform - same equipment should have same software

Fast response/expertise on platforms

Target smaller companies rather than large corporations

Walk on water/make sure you drain the swamp first because that's what you're getting into!

Hire experienced people - you can't offer support services with people new to the industry

Be knowledgeable on individual set-ups; do not have preconceived ideas

Understand what we do & the varied services we offer

Should express the value-added service you will provide to relieve work flow

Take your time & make sure solutions are open-ended and can grow

Make sure to employ people with multi-vendor product knowledge

We look for vendor with definite knowledge in the system, availability & response time

Carry a broad bag of skill sets & keep up with technology

Other issues raised by respondents were:

- Vendor must make products to meet business needs
- Transition planning changes from current to newer technology
- Do research and think about the future/take time
- Management support important.